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ABSTRACT

Today's education governance reform efforts call for new ways of allocating resources to public education to allow for more local control of budgetary decision making. This research begins by exploring the federal, state, and local mechanisms by which public education is supported in California before turning to an examination of how those resources are used by school districts. The variety of mechanisms by which school districts receive revenues and the constraints on local spending decisions leave open questions as to how districts allocate education dollars. Questions such as how this varies by districts with different characteristics, what tradeoffs districts make in their allocation decisions, and what degree of flexibility they have to make resource-allocation decisions are addressed. through California's financial reporting system and the detailed budgets of school districts, measures were constructed to show how much districts received in public funds from local, state, and federal governments and how the districts used those resources. School district expenditures were matched to district and student characteristics, and multivariate analyses were used to isolate the effect of individual district and student characteristics on spending on a variety of expenditure categories. Four figures and 42 tables are included. Appendices contain methodological notes. (Contains 79 references.) (LMI)

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DISSERTATION

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The Finances of Education Governance Reforms in California

Evidence from School District Spending Patterns

Cathy S. Krop

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DISSERTATION

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The Finances of Education Governance Reforms in California

Evidence from School District Spending Patterns

Cathy S. Krop

RAND Graduate School

The original version of this study was prepared as a dissertation in August 1996 in partial fulfillment of the requirements of the doctoral degree in public policy analysis at the RAND Graduate School. The faculty committee that supervised and approved the dissertation consisted of Stephen J. Carroll (Chair), Dominic Brewer, Randy Ross.

PREFACE

A core element of today's education governance reform efforts is more local control of education decisionmaking. There are many issues that surround these efforts including how to assess their results, who will control decisionmaking, and who will be held accountable. In addition, there are considerable issues surrounding the finances of these reform efforts. The reform efforts call for new ways of allocating resources to public education to allow for more local control of budgetary decisionmaking. In order to design such a system, we must first understand how public education is financed today in order to determine what changes are necessary, what changes are feasible, how to allocate resources under the new scheme, and who is affected and by how much. California is the focus of this research as California is often a leader in implementing school reforms and California's system of school finance has recently been receiving increased attention.

This research begins by exploring the federal, state, and local mechanisms by which public education is supported in California before turning to how those resources are used by school districts. Restrictions on local budgetary decisionmaking in California come from a variety of sources examined in this research including federal and state categorical aid programs, the California Education Code, the inability to raise discretionary resources locally, the underfunding of particular programs, collective bargaining agreements, and federal and state mandates. The variety of mechanisms by which school districts receive revenues and the constraints to local spending decisions leave open questions as to how districts allocate education dollars, how this differs by districts with different characteristics, what tradeoffs districts make in their allocation decisions, and ultimately what degree of flexibility they have to make resource allocation decisions. These questions are addressed through this research.

This research was funded as a Doctoral Dissertation by RAND's Institute on Education and Training. It is part of a larger body of research on California school finance and school reform efforts being conducted through RAND's Institute on Education and Training.

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SUMMARY

A core element of today's education governance reform efforts is more local control of education decisionmaking. The reform efforts call for decisionmaking authority to be moved between a variety of education players and that authority can take a variety of different forms. For example, decisionmaking authority can be moved from the federal government to the states in proposals to block grant education funding; from the state to the school district as categorical aid is consolidated and simplified; from the district to the school site with site-based management or charter schools; from the district to the parents in public school choice programs; or from the state to parents in voucher proposals. While the specific reform efforts may differ, in each the locus of decisionmaking authority, including budgetary authority, is changed in an effort to improve the quality of public education. Behind these efforts is the belief that greater freedom from the effects of centralized bureaucracy, hierarchy, and administrative rules will help to improve schools.

Many issues surround these education reform movements including how to assess their results, who will control decisionmaking, and who will be held accountable. In addition, there are considerable issues surrounding the finances of these reform efforts. The efforts call for new ways of allocating resources to public education and, therefore, entail designing new systems of school finance that support the reform efforts. To design such a system, we must first understand how public education is financed today in order to determine what changes are necessary, what changes are feasible, how to allocate resources under the new scheme, and who is affected and by how much. The financing issues are the focus of this research.

In addition, California is the focus of this research as California often leads the nation in implementing school reforms and California's system of school finance has recently received increased attention.

CALIFORNIA SCHOOL FINANCE

While there are a variety of movements to decentralize public education decisionmaking to more local levels of control, financial support for public education in California is largely state controlled. California is one of only a few states that approaches "full state funding" in that most education dollars come to the state and the state

reallocates the various revenues--federal, state, and local--to local school districts.

California's system of school finance has recently been receiving increased attention with concerns raised about various aspects of the system. One area of concern is the state's ability to adequately fund K-12 education as California's per-pupil spending on K-12 education has fallen further and further behind the national average for about 15 years. It will be difficult for the state to turn this trend around in the near future given the expected rapid growth in the student population and the many competing demands for state dollars including Medicaid, higher education, and the recently enacted three-strikes policy. Further, in addition to education funding in general being constrained, concern has been raised about particular programs that have become increasingly underfunded including transportation services and special education. Another area of concern is the complexity of the system of school finance in California. California school finance has become increasingly complicated over the past two decades as Propositions 98 and 111, state basic revenue limits, the California Education Code and state categorical aid programs have created a multitude of complicated funding formulas and rules and regulations associated with them. Finally, there is growing concern about the lack of local flexibility both to raise and to allocate education dollars. Local school districts depend heavily on the state government for decisions about how much and by what means they will receive education money.

STUDY DESIGN

This research begins by exploring the federal, state, and local mechanisms by which public education is supported in California before turning to how those resources are used by school districts. Restrictions on local budgetary decisionmaking in California come from a variety of sources examined in this research including federal and state categorical aid programs, the California Education Code, the inability to raise discretionary resources locally, the underfunding of particular programs, collective bargaining agreements, and federal and state mandates. The variety of mechanisms by which school districts receive revenues and the constraints to local spending decisions leave open questions about how districts allocate education dollars, how this differs by districts with different characteristics, what tradeoffs districts make in their allocation decisions, and ultimately what degree of flexibility they have to make resource allocation decisions. These questions are addressed through this research.

Drawing on the extensive data provided through California's financial reporting system as well as the detailed budgets of school districts, measures of how much districts receive in public funds from local, state, and federal governments and how those resources are used by the school districts are determined for each school districts in California. School district expenditures are matched to district and student characteristics and multivariate analyses are used to isolate the effect of individual district and student characteristics on spending on a variety of categories of expenditure (classroom personnel and materials, direct services, school facilities, school administration, other school expenditures, and district operations). This information is used to examine evidence of the degree of flexibility districts currently have in making resource allocation decisions and implications for school reform efforts that seek more local control of education decisionmaking.

SUMMARY OF MAJOR FINDINGS

People in the schools, district offices, and county offices of education suggest that a lack of budgetary flexibility is a major obstacle to local decisionmaking. If this is the case, changing the level of budgetary authority without addressing the constraints to spending those resources may result in little change under decentralization. This research suggests on what kinds of expenditures and in what types of school districts there is more or less flexibility to make resource allocation decisions. The results point to possible tensions between local control and the current structure and policies for financing K-12 education in California.

There is little variation in classroom personnel and materials expenditures across school districts. Districts show little variation in the level or share of dollars they allocate to classroom personnel and materials, by far the largest category of spending. This is not surprising given that the California Education Code, categorical aid programs, and collective bargaining agreements all place restrictions on decisions guiding classroom personnel and materials expenditures. To the extent that variation occurs, it is explained in large part by two factors: 1) Different minimum shares of expenditures to be allocated to this function by different level districts (elementary, high school, unified) as set in the California Education Code, and 2) The total level of spending in districts--districts with more to spend, controlling for district and student characteristics, spend equal or more per-pupil on classroom personnel and materials while allocating a relatively small

share of their dollars to this category and boosting expenditures elsewhere.

The smallest school districts provide some evidence as to how decisions would be made at more local levels of control under current rules and regulations. Controlling for other factors, the smallest districts show statistically significant differences in their patterns of spending than the larger size school districts and also show limited flexibility on some categories of expenditure. The smallest school districts spend more per-pupil on each category of expenditure due in part to higher basic revenue limits. At the same time, they spend significantly different shares of their dollars on each category of expenditure relative to larger school districts. The smallest school districts spend a smaller share of their dollars on classroom personnel and materials and on direct services than the larger school districts and a larger share of their budgets on school facilities, school administration, other school expenditures, and district operations. These larger allocations to administrative functions are due in part to almost all districts, regardless of their size, filling particular administrative functions such as a business official to manage the financial resources and transportation and food services managers to comply with the rules and regulations governing the provision of these services. The smallest districts do show considerably more variation in their spending patterns than do the larger districts. But, even the smallest districts show little variation in their allocations to classroom personnel and materials.

There appear to be some opportunities to raise revenues locally, but these opportunities are very limited. While Proposition 13 has severely constrained the ability of all districts to raise additional discretionary resources locally, wealthier communities provide evidence that there are some opportunities to raise alternative, flexible resources. They use these additional resources to boost spending on classroom personnel and materials, school administration, other school expenditures, and district operations.

Districts with relatively large percentages of children in poverty spend more per-pupil in total and on several categories of spending due to a number of categorical aid programs that are tied to poverty numbers. While it is not known whether per-pupil spending in districts with large percentages of children in poverty is high enough to compensate for the additional needs of students in those districts, districts with large percentages of children in poverty do spend statistically significantly more per-pupil than other districts, controlling for other factors. This result is different from the

results found in another recent study (NCES, 1995) that looked across all districts in the United States. The difference in results is likely due in part to the combination of the *Serrano* decisions and Proposition 13 in California which have greatly limited the ability of districts to raise additional dollars locally. Categorical aid is an important source of additional resources to districts with intense competition over the division of total state dollars between basic aid and categorical aid and among categorical aid programs.

Districts with large limited English proficient populations appear to face particular constraints in their spending decisions. Districts with large limited English proficient populations, controlling for other factors, likely face little flexibility in making spending decisions given their low level of resources. Consistent with the findings in previous research on low-spending districts, districts with relatively large percentages of limited English proficient students spend less per-pupil on a variety of categories in order to boost their share of spending on classroom personnel and material.

Districts with large special education populations trade off expenditures on school facilities for other kinds of expenditures. The patterns of spending in school districts as the percentage of special education students increases suggest what types of tradeoffs districts are making given the underfunding and requirements of the special education program. Districts with larger percentages of special education students spend more per-pupil on all categories of spending except for school facilities. As the percentage of special education students increases, districts spend a smaller share of their dollars on school facilities while increasing expenditures on other functions such as direct services and district administration.

Districts receiving a relatively large share of their dollars from categorical aid programs spend a larger share of their dollars on administrative functions. Controlling for other factors, districts with large special needs populations and, therefore, a relatively large share of their dollars received from categorical aid programs, spend a larger share of their dollars on district operations. These programs often involve complying with a variety of rules and regulations associated with them as well as filing a multitude of forms and computing complicated funding formulas.

CONCLUDING REMARKS

This research seeks to provide guidance and direction to policymakers and education reformers in determining the fiscal feasibility and fiscal implications of education governance reform

efforts. The research approach developed in this study seeks to understand the concept of local control and flexibility of budgetary resources through assessing the restrictions placed on the ability of school districts to make decisions over the allocation of their resources and current district allocative behavior. But, questions of local control and flexibility over resource allocation decisions pose complicated issues that this research cannot fully resolve. The results from this research provide some interesting initial insights and point to some areas for future research.

One area for future research is to examine resource allocation decisions at the school level. Restrictions placed on overall district spending do not necessarily preclude variation in spending patterns among schools within districts. Even if the same restrictions face schools as currently face districts, different governance structures in schools may allow for more flexibility to work within current constraints. Another area of future research is to evaluate options to raise additional resources locally. This includes revisiting current constraints to generating resources locally and measuring some of the effects of loosening those constraints. This research should include an examination of alternative sources of on- and off-budget revenues that districts are generating and assess the ability of diverse schools and school districts to generate revenues from non-traditional sources.

Research is also needed to assess the role of district offices of education under decentralized decisionmaking. Several of the education governance reform efforts, including site-based management and charter school movements, seek to move decisionmaking authority, including budgetary authority, to the school site. Currently, most education dollars flow to district offices with districts directly paying for many school services. The reform efforts, therefore, suggest the need both to define a new role for district offices of education as well as to define what should be a district function and what should be a school function. Finally, there is a need to examine ways to simplify state categorical aid funding. School districts in California that receive a relatively large share of their dollars from categorical aid sources are spending a relatively large level and share of their dollars on administrative functions. Simplifying state categorical aid funding is not a straightforward exercise given the complex fiscal and policy environment in which categorical aid funding operates.

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Many people have contributed to this effort and are due a great deal of thanks. The Institute on Education and Training (IET) at RAND has generously provided funding and support throughout this research. In addition, Roger Benjamin, director of the IET, has been a strong force in encouraging graduate students like myself to pursue an interest in education policy research.

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While recognizing the contribution of the many people who made this research possible, I would like to emphasize that the discussion and findings presented in the research reflect only the views of the author.

1. INTRODUCTION

A core element of today's education reform efforts is more local control of education decisionmaking. The recent emphasis on local control is a response to a variety of factors including: increased skepticism that better education can be achieved simply by giving more money to the schools or equalizing funding across schools; a general dissatisfaction with the performance of public education and the hope that changes in governance structures can help improve education; the new standards movement that looks to all students achieving high minimum levels of achievement in the near future; and more general decentralization movements in the public and private sectors.

The reform efforts call for decisionmaking authority to be moved between a variety of education players and that authority can take a variety of different forms. For example, decisionmaking authority can be moved from the federal government to the states in proposals to block grant education funding; from the state to the school district as categorical aid is consolidated and simplified; from the district to the school site with site-based management or charter schools; from the district to the parents in public school choice programs; or from the state to parents in voucher proposals.

While the specific reform efforts may differ, in each the locus of decisionmaking authority, including budgetary authority, is changed in an effort to improve the quality of public education. Behind these efforts is the belief that greater freedom from the effects of centralized bureaucracy, hierarchy, and administrative rules will help to improve schools. Advocates also emphasize that effective decentralization provides greater accountability--for example, under a public school choice system, parents hold schools accountable by having the authority to choose which school to send their children.

There are many issues that surround these education reform movements including how to assess their results, who will control decisionmaking, and who will be held accountable. In addition, considerable issues surround the finances of these reform efforts. The efforts call for new ways of allocating resources to public education and, therefore, entail designing new systems of school finance that support the reform efforts. In order to design such a system, we must first understand how public education is financed today in order to determine what changes are necessary, what changes are feasible, how to

allocate resources under the new scheme, and who is affected and by how much. The financing issues are the focus of this research.

FOCUS ON CALIFORNIA

California is the focus of this research, although some of the lessons learned can be applied to other states. This research focuses on California as California is often a leader in implementing school reforms and California's system of school finance has recently been receiving increased attention.

Recent California Public School Governance Reform Movements

A variety of reforms are being proposed and/or implemented in California, as well as in other states, that to varying degrees move decisionmaking authority to more local levels of control. At their base, they look to improve the quality of education through changes in governance structures of education systems, and as part of that the finance structures of education systems. They change the level of decisionmaking without necessarily changing the total resources available to education. Fiscal constraints in California in the 1990s have meant that education reforms have been and will likely continue to be constrained by little or no new state resources. This is very different from the school reform efforts of the early 1980s.[1]

California has to some extent implemented charter schools, site-based management, and public school choice. Clearly drawn lines do not distinguish these reform movements as each of the movements has some characteristics of the others encompassed in it. For example, one of the key concepts underlying the charter school movement is public school choice as charter school enrollments explicitly are not tied to residential area. In addition, the degree and scope of implementation of these reforms varies from site-to-site so that any discussion of them is in general terms.

Both site-based management and charter school reforms, to varying degrees, remove state and local regulations on schools and allow the principals, teachers, and/or parents to make educational decisions, including budgetary decisions, based on local conditions. While site-based management tends to maintain the organizational structure surrounding public schools, charter schools change that structure. Charter schools operate under the terms of a contract or charter with a sponsoring agency (e.g. a local school district, county board of

[1]For example, Senate Bill 813 included longer school days, a longer school year and smaller class sizes.

education, or state board). Who controls what in a charter school is left for the school to negotiate with its sponsoring agency. Charter schools may, to varying degrees, be exempt from local and state rules, hire their own staff, determine their own curriculum, receive funding directly from the state, and control their own budgets. In return, each school's charter spells out the outcomes against which the school will be held accountable and how those outcomes will be measured. In 1992, California became the second state after Minnesota to pass Charter school legislation. As of January 1995, charter schools were operating in nine states and at least 16 other states were considering charter school legislation (Center for Policy Studies, 1995). California currently has a cap of 100 charter schools and the State Board of Education is considering whether or not to raise the cap (EdSource, September 1995). An evaluation of charter schools by the California Department of Education is due by 1999.

Site-based management which also gives schools greater control over decisionmaking has been a widespread reform strategy. Los Angeles Educational Alliance for Restructuring Now (LEARN), operating in Los Angeles Unified School District (LAUSD), is a concentrated effort at site-based management. By the summer of 1995, LEARN was in various stages at 89 schools out of the about 700 schools in LAUSD and 103 more schools were in training.

California also has limited public school choice by which students can choose to enroll in a public school outside of their operating district under certain circumstances, including space availability in the school of choice. And, California was the first state to seriously consider statewide private school choice when Proposition 174, the Parental Choice in Education Initiative, was put before the voters in November 1993.[2] Although the initiative failed, private school choice is still an active issue in California as well as in other states.

California School Finance

While there are a variety of movements to decentralize public education decisionmaking to more local levels of control, financial support for public education in California is largely state-controlled. California is one of only a few states that approaches "full state funding" in that most education dollars come to the state and the state reallocates the various revenues--federal, state, and local--to local school districts. The combined effects of court-imposed school finance equalization in the *Serrano* decisions of the 1970s and the local

[2]For more information on Proposition 174 see Shires, et. al. (September 1993).

property tax limitation measure Proposition 13, as enacted in 1978, have led to a centralized, state system of school finance in California.

A State can have control over education funding while maintaining local control of education decisionmaking by limiting categorical programs and having less restrictions on their use and by limiting the mandates, rules and regulations on the use of other moneys. A rule of thumb used to be that state governments relied most heavily on providing general aid while the federal government relied most heavily on providing categorical aid for particular student populations and educational purposes. Today exceptions to this rule are more and more common. The federal government has recently relaxed and made less binding some of the restrictions governing its aid while states are increasingly inclined to add restrictions to the uses of their funding. California has followed this general trend by moving away from general aid toward more restrictive forms of state aid as well as by imposing restrictions on the use of general aid through the Education Code.

California's system of school finance has recently been receiving increased attention with concerns raised about various aspects of the system. One area of concern is the state's ability to adequately fund K-12 education. How much money gets allocated each year to K-12 education in California is governed by a complex set of rules that were implemented by the voters in November 1988 as Proposition 98 and amended in June 1990 by Proposition 111. The education community placed Proposition 98 on the ballot in an effort to give education a constitutionally protected portion of the State budget and expectations ran high that the measure would increase school funding. But, the deep and extended recession in California in the 1990s resulted in education funding being so low under the guaranteed minimum funding formulas of Propositions 98 and 111 that the state supplemented those minimums with loans and transfer payments just to maintain nominal per-pupil spending. California's per-pupil spending on K-12 education has been falling further and further behind relative to the national average for about 15 years. In 1978, the year Proposition 13 was enacted, California's per-pupil spending on public K-12 education was around the national average, as it had been over time. By 1993-94, California's per-pupil spending for public education ranked 40th in the nation which put it below the national average by $1,090 per pupil. It will be difficult for the state to turn this trend around in the near future given the expected rapid growth in the student population and the many competing demands for state dollars including Medicaid, higher education, and the recently enacted three-strikes policy.

Further, in addition to education funding in general being constrained, concern has been raised about particular programs that have become increasingly underfunded. Two of these programs are transportation services and special education. Funding for transportation services has not been adjusted for growth in pupils transported since 1983 and has grown by only 22 percent for inflation in over 10 years. Over the same time period, statewide student growth has been about 31 percent and inflation cost increases have been over 40 percent (Goldfinger, 1994). In addition, special education is unique among all categorical programs in California as the mandate to provide special education services must be met, regardless of whether the resulting expenditures exceed the revenues received. As a result, California school districts have experienced ongoing "encroachment" into general education funds to maintain special education services. For districts that rely heavily on transportation services or have a lot of special education students, for example, questions are raised as to what kinds of tradeoffs they are making in order to support these underfunded programs.

Another area of concern is the complexity of the system of school finance in California. California school finance has become increasingly complicated over the past two decades as Propositions 98 and 111, state basic revenue limits, and state categorical aid programs have created a multitude of complicated funding formulas. In addition, state categorical aid programs have grown over time both in number and as a share of total state education dollars. These programs involve a variety of different implementation requirements as well as monitoring and reporting functions. Also, as funding formulas for some categorical aid programs have become outdated and as the number of programs have grown, questions have been raised as to whether categorical aid continues to tie to need and as to collectively how the programs are affecting district spending decisions. Further, the California Education Code has continuously been added to over time without examining how the codes work together or which codes may no longer be relevant.

Finally, there is growing concern about the lack of local flexibility both to raise and to allocate education dollars. Local school districts are heavily dependent on the state government for decisions about how much and by what means they will receive education money. In addition to the lack of local control in determining the size and type of revenues, there are a variety of restrictions put on the use of the revenues received. There exist federal and state constraints that filter in their consequences to the district and school level, and

then there are district and school level constraints that are collectively woven in complicated procedures. These constraints on local allocation decisions include restrictions on the use of categorical aid, rules in the state education code restricting district allocations, mandated services, local collective bargaining agreements, and the inability to raise supplemental, discretionary dollars locally.

THIS ANALYSIS

Complex funding issues have confronted potential applicants and participants in school governance reform efforts such as charter schools and site-based management schools as well as those trying to reform federal, state, or local aid programs. The efforts call for new ways of financing public education to allow for greater local control over education decisionmaking. Through analyzing public K-12 education finances in California today, this research seeks to provide guidance and direction to policymakers and education reformers in determining the fiscal feasibility and fiscal implications of education governance reform efforts. Changing the level of budgetary authority without addressing constraints to that authority may result in little change under local control.

The mechanisms by which school districts receive revenues and the constraints to local spending decisions leave open questions as to how districts allocate education dollars, what tradeoffs they make in their allocation decisions, and ultimately what degree of flexibility they have to make resource allocation decisions. This report begins to answer these and other important school finance questions in ways that have not been previously reported. Measures of how much districts receive in public funds from local, state, and federal governments and how those resources are used to provide public education are determined for all school districts in California, and the measures are matched to district and student characteristics.

Specifically, this research explores all of the types of spending that take place in school districts in California, the size of those expenditures, how much variation there is in spending patterns across school districts, and the extent to which resource allocation decisions are influenced by district and student characteristics. Multivariate analyses are used to isolate the effect of individual district and student characteristics on spending on a variety of categories of expenditure (classroom personnel and materials, direct services, school facilities, school administration, other school expenditures, and district operations). This information is used to examine evidence of the degree of flexibility districts currently have in making resource

allocation decisions and implications for school reform efforts that seek more local control of education decisionmaking.

ORGANIZATION OF THE REPORT

This report is divided into eleven sections. The next section examines the mechanisms by which K-12 education is funded in California, evidence as to how local districts make resource allocation decisions, and constraints to local decisionmaking. Section 3 describes the questions guiding this study. Section 4 then describes the research approach and methodology used to answer the questions guiding the study and Section 5 details the data sources being used. Section 6 provides a description of California school districts. Section 7 presents how K-12 expenditures have been organized for this research before turning in Section 8 to school district spending patterns. Sections 9 and 10 examine the effects of district and student characteristics, respectively, on district spending patterns. Some conclusions are presented in Section 11.

2. THE ALLOCATION OF EDUCATION RESOURCES--FEDERAL, STATE, AND LOCAL MECHANISMS

The federal government, the state government in California, and local school districts in California each makes decisions about how to allocate dollars in support of K-12 education in California. This section explores the mechanisms by which each of them allocates education dollars. At the federal level, this involves looking at the federal role in K-12 education and the sources of federal funding to California. At the state level, this involves examining the state's role in funding K-12 education, the sources of state funding to K-12 education, the basis for allocating state aid and restrictions that the state places on local spending decisions. At the local level, this involves looking at the local role in funding K-12 education, evidence as to how school districts make spending decisions and constraints to local decisionmaking.

FEDERAL ALLOCATION MECHANISMS

The role of the federal government in funding education has always been ancillary to that of state and local authorities. The federal share of spending for elementary and secondary education today in the United States amounts to about 6 percent; it has never been more than 10 percent (Congressional Budget Office, 1993). In California, the federal government has historically, on average, provided about 7 percent of K-12 funding (Governor's Budget, various years).

Yet, the role of the federal government is more significant than the size of its contribution might suggest--in part because of its significant role in providing aid to particular groups of students[3], in part because of legislated and court-ordered mandates, and in part because of its role in stimulating and guiding education reform policies at the state and local level.

Federal Role in K-12 Education

The federal role in education expanded dramatically beginning in the 1960s in response to the initiatives of President Lyndon B. Johnson's national war on poverty. In 1965, Congress passed the Elementary and Secondary Act (ESEA) and federal legislation affecting

[3]The federal contribution can vary significantly from district to district. The federal contribution for the 1993-94 school year, for example, ranged from 0 percent of total revenues for some districts to over 20 percent for other districts.

elementary and secondary education increased significantly. The numerous federal education programs enacted in the 1960s and 1970s mostly addressed concerns about equity in educational opportunity associated with narrowly defined groups of students. In particular, programs were instituted that promoted equal educational opportunity for children who are disadvantaged, who have limited proficiency in English, who are disabled, and who are Native Americans (Congressional Budget Office, 1993).

The 1980s brought about a number of changes in the federal role in elementary and secondary education. One change was to create a block grant that grouped more than 20 categorical grant programs under the ESEA together under the broader purpose of fostering school improvement, largely as defined by state and local officials. The block grant program represented a new effort by the federal government to focus on issues of "excellence" in education in addition to the continuing focus on "equity" represented by many of the categorical programs (Congressional Budget Office). A second change built on the creation of the U.S. Department of Education in 1980 with the support of President Carter. The secretaries of education under Presidents Reagan and Bush used the office to focus attention on issues concerning the quality of education.[4] Perhaps the culmination of their efforts was a summit meeting of President Bush and state governors which led to the adoption of national goals for education for the year 2000 (Congressional Budget Office, 1993).

The federal government again examined its role in education in the early 1990s as it considered reauthorizing the Elementary and Secondary Education Act. The major elementary and secondary education programs under the ESEA had developed to provide assistance primarily for four purposes (Riddle, March 1994): 1) to help meet the special educational and related needs of targeted pupil groups, especially low achievers living in relatively low income areas, those who have limited English proficiency, and racial or ethnic minorities; 2) to improve instruction in areas of special national concern such as mathematics, science, and drug abuse; 3) to demonstrate, evaluate, and disseminate information about innovative educational approaches; and 4) to provide aid through a "block grant" to support supplementary resources and services selected by State and local educational officials. About 70 percent of federal program funds under the ESEA historically had gone to the first purpose of promoting equal educational opportunity for

[4]A number of federal reports were issued during this time. One that received a lot of attention was "A Nation at Risk" from the National Commission on Excellence in Education in 1983.

specific types of students (Congressional Budget Office, 1993). Funds for programs in support of equal educational opportunity were distributed through allocation formulas that tied funds to specific purposes and types of students.

The federal government faced two fundamental issues in its deliberations over reauthorizing elementary and secondary education programs (Congressional Budget Office, 1993). The first was the relative priority to be given to matters of equity for particular groups of students, compared with broader concerns about the excellence of the education provided to all students. The second issue was how active a role the federal government should play in the governance of the U.S. education system, which is largely funded by state and local governments.

In 1994, the federal government reauthorized the Elementary and Secondary Education Act and continued to provide a variety of services for students with special needs, with the bulk of funding targeted for compensatory services to disadvantaged students. At the same time, the Act allowed for changes in the administration of the programs that reduced the federal role in prescribing the use of program funds, increased local accountability for improving student achievement, and emphasized the coordinated use of the different sources of funding by school districts (Legislative Analyst's Office, February 1995). These changes reflected a new federal strategy for improving K-12 education.

In the same year that the ESEA was reauthorized, Congress passed the Goals 2000: Education America Act. The ESEA and Goals 2000 share some common themes (Legislative Analyst's Office, February 1995). First, the Acts require states to set goals for what all students should learn. Through the use of statewide goals for all students, the federal Acts seek to raise the standards for compensatory programs and reduce the fragmentation of services provided to students. In addition, instead of a process-oriented oversight role, the Acts seek to provide more state and local flexibility in implementing programs and to judge local programs by how well students are educated. Finally, the Acts encourage increased coordination among federal education programs to reduce fragmentation of federal programs at the state and local level. States and school districts are given greater latitude to integrate funding from the many titles and programs within the ESEA and federal waivers are available for many of the ESEA titles. In addition to the waiver authority, Congress authorized states and school districts to submit a consolidated plan for most ESEA programs and other federal programs such as Goals 2000 and federal vocational education programs. The federal government does not mandate that consolidation and

coordination must occur nor does it specify how it should occur--this question is left to the states to answer. Implementation of these changes by the states is still in the early stages.

Federal Sources of Elementary and Secondary Education Funding to California

The ESEA provides substantial funding to California and addresses a wide variety of problems and needs. The Act contains 14 "titles," or program areas and authorizes 32 separate funding programs. Seven titles are of particular importance to California in terms of their size. Table 2.1 displays 1994-95 and 1995-96 funding for those seven ESEA titles. The 1994-95 funding levels are based on the previous version of ESEA and the 1995-96 amounts are based on the reauthorized Act. As Table 2.1 illustrates, California received more than $900 million in 1994-95 and more than $1 billion in 1995-96 from the seven ESEA titles. More than two-thirds of the funding allocated by these seven titles is contained in Title 1 compensatory education grants to school districts.

Table 2.1

Federal K-12 Funding, California (Dollars in Millions)

	1994-95	1995-96
Title 1: Services for Disadvantaged Children		
Compensatory Education	693.2	732.8
Even Start family literacy	10.9	12.2
Migrant Education	101.0	101.9
Title 2: Professional Development	47.4	60.1
Title 3: Education Technology	----	4.9
Title 4: Safe and drug-free schools	53.0	54.2
Title 5: Magnet Schools	7.6	7.6
Title 6: Innovative Educational Strategies	47.4	39.6
Title 7: Bilingual Education	39.1	40.5

NOTE: The ESEA numbers are from the Legislative Analyst's Office, February 1995.

These seven titles differ both in the allocation methods by which the federal government distributes funds and in the restrictions placed on the state and on local school districts in the use of the funds.

The largest size programs, those under Title 1, are allocated based on formulas (Irwin, September 1992). Compensatory education provides resources for low-performing students attending schools in high poverty areas. Compensatory funding is based on the number of poor children aged 5 to 17 in a county, calculated by the number of children from families with income below the poverty line as reported in the decennial census. Counties with high concentrations of children in poverty receive additional concentration grants. Eventhough the federal aid is determined at the county level, the federal government provides

the money to the state. The state's allocation is the sum of the allocations to all the counties. Then, the state based on poverty counts at the district level allocates the money to districts. The poverty count is only used as an indicator of which students are likely to need remedial services. Once the money gets to the districts and schools, it is targeted at low-performing students.

The other titles are mixed in their allocation of funds by formulas and by discretionary grants. For example, drug free schools provides aid to states and school districts for programs of alcohol and drug education and prevention. The program includes formula grants to states and competitive grants for the training of personnel. Bilingual education, which provides services to limited English proficient students, likewise consists of discretionary grants to school districts and also supports training and technical assistance.

Both the state and school district roles vary depending on the ESEA program. For example, under Title 1 the federal government directs states to set performance standards, monitor district performance based on those standards, and provide a system of technical support to schools and districts with a high percentage of disadvantaged students. Under Title 2, the state is charged with coordinating programs that provide staff development services. Under Title 6, the state's role is limited to evaluation and resource allocation (Legislative Analyst's Office, February 1995). While states have significant responsibilities, districts make important decisions over the allocation and use of funds with the restrictions placed on school districts in making resource allocation decisions varying by program. Title 1, in particular, has a number of specific rules governing local program responsibilities. These include, selecting poverty criteria that will be used to distribute funds to district schools, evaluating the impact of services on individual students, and ensuring that Title 1 funds are spent for services to eligible students. At the other extreme, Title 6 places virtually no limits on how districts may use program funds (Legislative Analyst's Office, February 1995).

The ESEA as reauthorized in 1994 encourages increased coordination among federal education programs to raise the standards for compensatory programs and reduce the fragmentation of services provided to students. States and school districts were given greater latitude to integrate funding from the many titles and programs within the ESEA and federal waivers were made available for many of the ESEA titles. California is still in the early stages of considering these changes. Progress has been made toward consolidating the state's application for all Title 1 programs, for example. At the same time, significant challenges exist

to coordinating and consolidating programs of support. The ESEA alone creates 32 separate funding programs, some of which are administered by the state and others that are administered at the federal level. These programs, in addition to existing state categorical programs, create a complex fiscal and policy environment.[5]

STATE ALLOCATION MECHANISMS IN CALIFORNIA

The role of the state in funding education in California has changed significantly over time. Prior to the passage of Proposition 13 in 1978, local property tax revenues provided the majority of funding for K-12 education in California. Beginning in 1978, the state assumed the primary role in funding K-12 education and has since then, on average, provided about 62 percent of total K-12 funding (Governor's Budget, various years). In addition, the role of the state government is more significant than the size of its contribution alone--in part because of its role in equalizing education spending and in part because of its role in setting education policy by restricting local decisions through categorical aid programs and state-imposed mandates and regulations.

State Role in Funding K-12 Education

California school finance has become increasingly complicated over the past two decades. There are three main forces that have shaped the allocation of state resources for education and are likely to shape the direction of future changes. The three main forces are: 1. The *Serrano* school funding equalization decision; 2. Proposition 13, the local property tax limitation initiative; and 3. Proposition 98, the 1988 School Funding and Accountability Initiative. Together, these forces have created a centralized, state system of school finance in California.

The 1971 California Supreme Court finding for the plaintiffs in the landmark *Serrano v. Priest* case declared that the state's system of school finance was so dependent on local property tax wealth that it violated the constitutional "Equal Protection" rights of pupils in low property wealth districts as these pupils were denied an equal educational opportunity.[6]

In response to the State Supreme Court ruling, the California legislature moved to equalize revenues among local school districts. To

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[5]See Legislative Analyst's Office report (February 1995) for challenges to effective implementation of the ESEA and recommendations for overcoming those challenges.

[6]Serrano v. Priest, 5 Cal. 3d 584, 487 P.2d 1241, 96 Cal. Rptr. 601.

accomplish this goal, the state established a system of revenue limit controls that limited the maximum amount of general purpose state and local revenue that a district could receive. This revenue limit amount was to be equalized over time and revenue limits still serve as the basis of California school funding today.

The revenue limits achieved only moderate success in meeting the *Serrano* equity requirements.[7] It took voter approval of Proposition 13 in 1978 to make genuine progress toward meeting the *Serrano* equity requirements. The passage of Proposition 13 resulted in more changes in California finance than the previous decade of court cases and legislative battles. Proposition 13 imposed a one percent limit on general purpose property tax rates and made school districts heavily dependent on state aid for support.

One of the fundamental changes created by Proposition 13 was the result of a shift in the revenue limit calculation (Goldfinger, 1994). Prior to Proposition 13, a district computed its revenue limit, subtracted the amount of state aid it would receive and the balance was the maximum amount that the district could raise from property taxes. When Proposition 13 limited the amount of a school district's property tax revenues, state law was changed to reverse this process. Now when a district computes its revenue limit, the district's share of the one percent maximum property tax rate is subtracted and the balance is the district's entitlement to state aid. This means that any increase in the revenue limit must be funded entirely by the state.

Primarily because of this single change in revenue limit funding, the property tax limitation imposed by Proposition 13 created a number of consequences for K-12 education including (Goldfinger, 1994): 1) instability as state aid is dependent on fluctuations in the state economy; 2) uncertainty over mandated cost reimbursements. Prior to Proposition 13, local governing boards had the authority to increase a district's revenue limit to pay for any unfunded mandates imposed on districts and pay for them with local property taxes. Now, the Legislature and Governor must approve supplemental funding for these mandates or the costs of such mandates have to come from reductions in other educational programs. 3) Limited local revenue options. District and county offices of education have very little ability to raise discretionary revenues since there is no longer any authority to increase the property tax rate for operating expenditures. And, other local tax options are restricted as well.

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[7]The California Supreme Court ruled in the 1974 *Serrano* decision that the legislation still did not equalize educational opportunity either sufficiently or fast enough.

For the first few years following Proposition 13, the state was able to cushion the loss of local property taxes by providing a high level of funding in large part by the state spending down its huge surplus. But beginning in 1982 with the state's surplus exhausted and a recession causing a reduction in state tax revenues, California's education funding relative to the rest of the nation began to worsen. Despite school improvement programs enacted in 1983[8] and the state Lottery funding that began in 1985[9], California dropped further and further behind the national average in per-pupil K-12 education funding (National Education Association, various years).

The education community placed Proposition 98 on the ballot in an effort to give education a constitutionally protected portion of the State budget. When Proposition 98 was enacted in 1988, expectations ran high that the measure would increase school funding and help take the politics out of school finance (Goldfinger, 1994). Proposition 98, as amended by Proposition 111, lays out a complex formula for determining the minimum amount to be funded for K-14 education. While Proposition 98 has not met the early financial expectations or taken politics out of school finance, it has dramatically changed the landscape of school funding.

The deep and extended recession in California in the 1990s has meant that the constitutionally guaranteed minimum funding under Proposition 98 has been so low in recent years that the state has supplemented it with loans and transfer payments just to maintain nominal per-pupil spending. In addition, whereas prior to Proposition 98 the education community competed against all other state-funded programs for its share of the State Budget, now competition is increased within the education community itself. Given a fixed pot of education money determined by formulas under Proposition 98, programs that benefit one segment of education drain revenues that could benefit other agencies. Examples of this internal competition are unrestricted funding versus categorical funding, funding for equalization aid that helps low revenue districts versus funding that benefits all districts, and funding for mandated services versus funding for all other education programs.

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[8]School funding improved somewhat due to a school reform movement that culminated in the passage of SB 813 that included programs to increase the length of the school year and day, programs to increase salaries for new teachers, a statutory cost-of-living adjustment formula for K-12 education, and increased funding for instructional materials.

[9]Lottery moneys typically constitute only two to three percent of a school district's revenue.

State Sources of K-12 Education Funding

California allocates K-12 education funding through two basic mechanisms: basic support revenues (called "base revenue limits") and categorical aid. Table 2.2 displays the state share of the K-12 revenue limit as well as the largest state categorical aid programs for the 1994-95 and 1995-96 fiscal years.[10]

Table 2.2

State K-12 Funding, California (Dollars in Millions)

	1994-95	1995-96
State Share K-12 Revenue Limit	8,197.1	9,434.5
Categorical Programs, Proposition 98		
Child Nutrition	51.8	52.5
Court-Ordered Desegregation	415.4	415.4
Economic Impact Aid	324.2	330.6
Educational Technology	23.4	122.5[11]
Home to School Transportation	332.2	339.5
Instructional Materials[12]	163.6	133.3
Mentor Teacher	68.1	68.1
School Improvement[13]	317.5	320.5
Year Round Schools	58.2	58.2
Voluntary Desegregation	86.3	86.3
Special Education	1,617.3	1,726.5
All Other Categorical Programs[14]	241.2	709.1[15]

NOTE: 1996-97 Governor's Budget.

Revenue limit dollars are allocated across all school districts based on average daily attendance (ADA) in the school district. The revenue limits that are set each year by the state are essentially equalized across all districts but vary based on the level and size of districts. High school districts receive the most for each ADA followed by unified districts and then elementary district. In addition, revenue

[10]Categorical aid programs with funding of $50 million or more in either year are broken out in Table 2.2.

[11]This is a one time increase in educational technology expenditures. The 1996-97 proposed budget is $22.5.

[12]Instructional Materials is divided into two programs in the budget: Instructional Materials K-8 and Instructional Materials 9-12. About 80 percent of revenues each year go to Instructional Materials K-8.

[13]School Improvement is divided into two programs in the budget: School Improvement K-8 and School Improvement 9-12. About 85 percent of revenues each year go to School Improvement K-8.

[14]Funding for Child Development, Adult Education, and ROCPs is not included in this table. Funding for these programs in the 1995-96 year was $471.0 million, $427.0 million, and $250.1 million respectively.

[15]This includes a one time block grant Cost-of-living increase of $135.6 million for programs included in the Categorical Aid Mega-Item and a one time block grant for instructional materials, deferred maintenance, education technology and non-recurring costs of $279.3 million.

limits are set separately for small districts which receive higher revenue limits.

Categorical aid, on the other hand, is allocated to serve specific purposes and/or specific populations of students. It is the categorical funding that has grown over time relative to the basic support revenues. In 1980, for example, there were 19 state-funded categorical programs which represented about 5 percent of total K-12 funding. By 1990, there were over 70 state-funded categorical programs representing about 12 percent of total K-12 funding. The categorical portion of the budget can be divided into four basic funding areas: support for school improvement; special needs-compensatory aid; variable cost equalization aid; and auxiliary service revenues (Timar, 1994). **Support for school improvement** aims at improving instructional quality by providing districts with fiscal incentives to promote state reform policies. Though district participation is voluntary, school improvement funding tends to be broadly inclusive. State categorical programs to affect school improvement have proliferated, although many are quite small in size. The largest of these programs, as shown in Table 2.2, are for instructional materials, $133.3 million in 1995, and the mentor teacher program, $68.1 million in 1995.

Unlike school improvement funding, **special needs-compensatory aid** is targeted to particular districts based on student characteristics. This type of funding is rooted in efforts to equalize the educational opportunities of poor, disadvantaged, handicapped, or non-English-speaking students. The special needs category has more recently grown to include the gifted and talented program as well as economic impact aid for low-income, minority students.

By far the largest special needs program is special education. Special education is unique among all categorical programs in California as the mandate to provide special education services must be met, regardless of whether the resulting expenditures exceed the revenues received--unlike virtually every other categorical program where expenditures may be held to the level of income.[16] Special education programs have never been fully funded in California. It is estimated that special education enrollment has steadily increased five percent

[16]Under the Federal Education of the Handicapped Act of 1975, states failing to provide special services in keeping with federal regulations are denied all federal aid to education. Although the federal share of support for special education peaked at 12.5 percent in 1979, total federal education aid in all areas and pressure by courts have been sufficiently high to discourage states from refusing to provide special education services that conform to federal service mandates. Federal law requires states to identify students in about 12 mandated categories. In addition, requirements for individual education plans (IEPs) have increased over time. States in general have developed rather elaborate special education funding mechanisms.

yearly without a concurrent increase in funding. As a result, California school districts have experienced ongoing "encroachment" into general education funds to maintain special education services. This "encroachment" cost over $800 million from districts' general operating funds in 1993-94 and is estimated to continue to grow due to growth in the number of students receiving Special Education services (EdSource, September 1995). As special education funding has never been equalized and is still based directly on each district's 1979-80 costs, this encroachment varies substantially by district.

Variable cost equalization revenues are allocated to districts to compensate them for extraordinary costs that lie outside of districts' control. Home-to-School transportation, year-round schools, and court-ordered desegregation are some of the programs in this funding category. Transportation funding has received increased attention recently as state aid for transportation has failed to keep pace with transportation costs. The problem is the result of the transportation aid formula having no adjustment for program growth and either zero or very low COLAs for most years since 1983-84 and negative adjustments for both 1992-93 and 1993-94 (Goldfinger, 1994). The final category, **auxiliary service revenues**, includes funding for adult education, food services, and deferred maintenance.

State Restrictions on Local Funding Decisions

The state can place restrictions of the use of education dollars through a variety of mechanisms, three of the most prevalent being: categorical aid programs, state mandates, and rules and regulations in the education code. One of the key areas facing school finance in California is whether the trends of the past to prescribe ends and means through categorical funding, mandates, and rules and regulations can be modified to meet the new emphasis on student outcomes and local control.

Categorical Aid

State categorical aid programs have grown both in number and as a share of the state education budget over the past decade. Categorical aid dollars, in contrast to basic revenue limit dollars, are used to target specific state policy goals by allocating money to be spent on defined purposes. Some categorical aid, such as that for instructional materials and staff development, is allocated to most or all school districts while other categorical aid, such as desegregation aid and special education funding, is targeted to districts according to student or district characteristics.

In addition to restricting the purpose for which the money can be used, categorical aid programs often place restrictions on the use of the dollars within the given purpose. Special education funding, in particular, provides an example of this. The special education funding formula is based on providing services under one of three program models, each with a certain array of associated staff and, in some cases, a prescribed number of pupils per staff member (Legislative Analyst's Office, 1995).

Recently, there has been movement toward removing some restrictions on the use of state categorical aid dollars. For example, the Legislature in 1994 requested the California Department of Education, the Department of Finance, and the Legislative Analyst's Office to jointly review the Master Plan for Special Education and propose a new funding model. The proposed model, included in the final report issued in November 1995, called for moving away from dictating how services are to be delivered and allow districts to configure programs based on local pupil needs and individual strengths of local staff.

In addition, beginning in the 1992-93 year, the governor's budget included a single appropriation for 38 categorical programs called the "Categorical Mega-Item." The mega-item was intended both to restrict the Governor's ability to use the line-item veto to target specific programs and to provide greater flexibility in transferring funds across categorical aid programs (Goldfinger, 1994). In 1996-97, for example, 42 out of the 47 categorical aid programs were included in the mega-item with about 60 percent of categorical aid funding included in mega-item programs. Special education funding has not been included in the mega-item since the 1993-94 budget year.

One of the most controversial aspects of the mega-item is the ability for districts to some degree to use the block of money for any or all of the programs making up the mega-item. The 1992-93 budget generally allowed districts to shift five percent of one program's funds to another. That provision has expanded over time and the Legislature and Governor currently allow districts to transfer up to 15 percent of the revenue from one program in the mega-item to another; however, a program can be increased by no more than 20 percent (EdSource, September 1995). In addition, the 1995-96 budget included an enrollment growth and cost-of-living block grant of about $136 million to programs within the mega-item. Under the terms of the block grant, districts have complete flexibility to allocate the block grant funds to any program within the mega-item. This flexibility allows districts to target the funds to meet the most urgent local needs.

State Mandates

The state must reimburse districts for whatever costs they incur related to carrying out a state mandate. Districts submit claims for costs through the Commission on State Mandates. The 1996-97 budget proposes to pay $121 million for reimbursement claims of 27 state-mandated K-12 programs. These programs include five retirement mandates, the collective bargaining mandate, the Teacher Evaluators mandate, pupil immunization and health screenings mandate, and the Credential Monitoring mandate.

The reimbursement process for local mandates has a number of disadvantages (Legislative Analyst's Office, 1996): 1) District funding varies widely. Not all school districts file claims for mandates. For some existing mandates, less than 40 percent of all districts file a claim. In addition, the per-ADA amount claimed for a particular mandate can vary widely on a district-by-district basis. 2) Districts may delay implementing new legislation. Local mandate reimbursements are a source of fiscal uncertainty for districts. Districts often wait for years to be reimbursed for costs and may receive more or less than anticipated. 3) Administrative costs are high. Under the claims process, districts must prepare and the state must evaluate and process claims for reimbursement from districts, resulting in significant state and local administrative costs each year.

Education Code

The state education code includes a variety of restrictions on how districts can allocate education resources. Some of these are direct restrictions--for example, what share of dollars must be spent on particular functions--while others are more indirect restrictions that affect the allocation of resources-for example, what types of instructional materials can be bought.

The education code has a number of restrictions related to the allocation of resources to the classroom. For example, the education code states that elementary, high school, and unified districts must allocate 60 percent, 50 percent, and 55 percent, respectively, of the district's "current expense of education" for salaries of classroom teachers.[17] In addition, the education code sets the maximum ratio of administrative employees to each 100 teachers in elementary, high school, and elementary districts.[18] Further, there are provisions that

[17]Education Code Section 41372.

[18]Education Code Section 41402. The maximum ratio of administrative employees to each 100 teachers is 9,8, and 7 in elementary school districts, unified school

penalize schools with class sizes above certain levels by reducing their apportionments.[19]

The code also sets rules for what services are to be provided in schools. For example, students are to have access to a school library whose services are guided by standards, rules, and regulations.[20] Further, school districts that receive funds for several categorical aid programs, such as school improvement programs and compensatory education programs, must use at least 85 percent of those funds at the school site for direct services to pupils.[21]

In addition, the education code sets rules for instructional materials to be purchased by school districts. The state board provides an instructional allowance for each district that can be used for five purposes with specifications as to the percentage of a district's allowance that can be used for each purpose. In addition, one of those purposes, the purchase of instructional materials, is further restricted for elementary schools to the purchase of instructional materials adopted by the state board.[22]

On the other hand, the education code largely leaves open the provision of many other educational services such as transportation services, health services, and the use of instructional aides. In addition, the code sets a minimum share of dollars to be spent on classroom teachers but does not restrict districts from spending more than the minimum. Similarly with instructional materials, the state sets regulations for the purchase of specific materials with the instructional allowance but districts may supplement those expenditures to purchase other materials.

LOCAL ALLOCATION MECHANISMS IN CALIFORNIA

Local property taxes have traditionally served as the foundation of basic aid for school districts. Equity considerations in many states over time have shifted control of education funding away from local governments to state governments. California, in particular, has limited the role of local governments in raising money for education due to the combination of court-imposed school finance equalization and Proposition 13.

Local property taxes provided about 55 percent of total K-12 revenues in 1977-78 and, following the passage of Proposition 13 in

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districts, and high school districts, respectively. Administrative employees do not include employees supported by categorical grants or federal funds.

[19]Education Code Section 41376.

[20]Education Code Section 18100-18101.

[21]Education Code Section 63000-63001.

[22]Education Code Sections 60200-60206 and Sections 60240-60252.

1978, fell to about 20 percent in 1979-80. Local property tax revenues continued to provide about 20 percent of total K-12 revenues until the early 1990s when the local property tax share shifted up to around 30 percent of total K-12 revenues (Governor's Budget, various years).

While the local government's role in controlling education funding decisions has diminished, it is still at the local level that the allocation of resources for education ultimately takes place. The local school district remains the basic administrative unit of schooling. And, despite increased federal and state regulations that have developed throughout the years, practical realities of daily government and the belief in local control of education have kept education a fundamentally local enterprise. Placing restrictions on use is always a matter of degree, and what really matters is how the restrictions affect behavior at the local level.

Local Role in Funding K-12 Education in California

In 1978, the state took over the allocation of local property taxes among local governments, a move which has never been rescinded. California is one of only a few states that approaches "full state funding" in that most education dollars come to the state and the state reallocates the various revenues--federal, state, and local--to local school districts (Thompson, et. al., 1994).

The amount of local tax revenues allocated to K-12 education is controlled by State policy. Beginning in the 1992-93 year, local funding for K-12 education increased as the Governor's Budget called for local governments to shift larger shares of local revenues away from local governments to K-12 school districts in amounts of about $1.4 billion in 1992-93 and $2.6 billion beginning in 1993-94.[23] Based on the state education funding formula under Proposition 98, this increase in local spending is fully offset by a decrease in state funding. This shift to the local governments did not provide for additional dollars to K-12 education but just reduced the state government's burden for funding K-12 education.

Local governments are severely restricted in raising additional revenues for local purposes, including K-12 education. Proposition 13 limits property tax rates to a maximum of one percent and a two-thirds vote requirement for the adoption or increase of other local revenues--such as local obligation bonds and parcel taxes--limits raising other revenues locally. Further, additional local tax revenues raised for K-

[23]For the 1992-93 year, $1.1 billion was ongoing and .3 billion was a one-time shift.

12 education in a district are offset by a reduction in state dollars available to the district, leaving little incentive to increase local revenues for education.

As local taxes have been constrained, schools and school districts have sought to tap alternative sources of revenues. Some schools and districts are experimenting with a wide variety of local enterprises including advertisements on buses, hallways, or athletic equipment, sales of used or donated materials, and sales of property. In addition, public school-private sector partnerships are currently being developed and operating in some schools and school districts. Further, some districts assess fees including cafeteria fees, transportation fees and fees from real estate developments. On average across all school districts in California, local miscellaneous funds provided about 6 percent of total education dollars in the 1995-96 school year (EdSource, September 1995).[24]

Evidence on How School Districts Make Spending Decisions

While this chapter has focused on the mechanism by which resources are allocated to elementary and secondary education in California, this sub-section will look more broadly at the evidence on how school districts make education spending decisions both in specific states and across all states. This includes evidence of how districts allocate dollars across particular functions as well as evidence of the district and school characteristics that may influence spending decisions.[25] While there are particular features to the California system of school finance that are different from other states and may affect district allocation decisions, there are also some similarities that can be seen across most or all states (Salmon, et. al., 1988). These include: states generally receive some federal categorical aid and are subject to federal mandates and regulations; states generally provide school districts with some mix of basic and categorical aid; and states generally over time have assumed more authority for funding education relative to local districts.

Evidence on How Districts Allocate Dollars Across Function

Studies have been conducted in a number of states in recent years that examine how education dollars are spent across particular education

[24]According to District Financial Reporting Forms, this varies from less than 1 percent for some districts to over 20 percent for other districts.

[25]An interesting dimension of district allocation mechanisms that is not considered in this study is the role of the various players-school boards, superintendents, school administration, etc.--in decision making.

functions. While the exact expenditure categories may differ, the studies generally include the division of expenditures across instructional expenditures, school support services, maintenance and operations, and district level administration. The share of resources devoted to each of these categories tends to be similar across studies in different states, controlling for the various expenditures that each study includes in each expenditure category. For example, instructional expenditures can be more or less inclusive depending on whether they are defined to include teachers' benefits, instructional aides' salaries and benefits, books, instructional materials, and instruction for special needs populations.

In general, using similar definitions, studies have found that about 60 percent of district expenditures are devoted to instruction. A study of Florida's 67 districts found that, on average, 65 percent of district expenditures were devoted to instruction (Nakib, 1994) and a study of system-wide expenditures in Milwaukee's school districts found that about 55 percent of expenditures were spent on instruction (Fischer, 1990). A similar study of spending in New York's public school districts found that about 62 percent was spent on instruction (Lankford and Wyckoff, 1994) and a study of four school districts in California found that between 63 and 67 percent of total general fund expenditures were devoted to instruction (Little Hoover Commission, 1991). Further, a study of district expenditure patterns across the U.S. found that on average 59 percent of district funds went to instruction (Picus, January 1993). In addition, the studies generally found that less than 10 percent of total expenditures go to district administration. This varies from a low of about 3 percent found in New York using a relatively narrow definition of district office expenditures to a high of 9 percent in Milwaukee using a more inclusive definition.

A question that arises from these and similar studies is, what is the mechanism that drives district allocative behavior? For example, do districts allocate a given share of their dollars to various functions regardless of their total level of expenditures? If that were the case; an additional dollar would be allocated across functions based on current shares. Or, are district allocations dependent on the relative level of expenditures in the district? An empirical study of district expenditure behavior found that there is far less variability among different types of districts in terms of the portion of total budgets allocated to each input as compared to the portion of discretionary budgets. The reason for this difference is that the share of a district's total budget allocated to an input reflects both its

expenditures to provide the minimum required level of that input and its discretionary expenditures for that input. If the minimum required level of expenditures for an input is large relative to discretionary expenditures for that input, and if the minimum requirements are roughly the same for different types of districts, then the proportion of total expenditures allocated to each input would be approximately the same for different types of districts even though the proportions of discretionary expenditures allocated to each input were much different (Carroll, October 1973). This suggests that there is a base minimum level of spending that all districts need to devote to produce a given function, like instruction, and then there is variability in how districts decide to allocate resources on top of that minimum.

Evidence on Factors that Influence Expenditures

In practice, districts are not completely free to allocate their budgets among inputs. For example, particular funding sources--like categorical aid--require specific resource allocation decisions. Categorical grants, whether they are tied to students, services, or inputs, are intended to increase spending in particular ways. In addition, agreements reached through the collective bargaining process by setting teachers' salaries and benefits have a major impact on a district's spending patterns. Also, federal and state mandates guide spending patterns in school districts.

Recent studies provide evidence on where expenditure differences occur and the district and student characteristics that may influence district spending patterns.

A study of Florida's school districts and schools found little variation at either the school or district level in how they allocate their resources (Nakib, 1994). Variation in the level of expenditures was more disparate at the school rather than the district level but mainly for the allocation of school funds among objects like materials and supplies and instructional capital. However, these objects collectively consumed no more than 5 percent of a total school's budget. This lack of variation was attributed in part to Florida's legislative statutes requiring how generated funds must be spent.

A recent study from the National Center for Education Statistics took advantage of a new data source that tracks census data to school districts to examine how district expenditures across districts in the United States differ based on particular district and student characteristics (National Center for Education Statistics, February 1995). School district expenditures were compared by such school district characteristics as median housing value, urbanicity, district

size, grade-level organization, and district cost-of-living and such student demographic variables as percentage of students in poverty, percentage of special education students, percentage of limited English proficient students, and percentage minority enrollments. These are factors that are generally recognized by federal and state allocation mechanisms to influence district costs. The study found that many of these factors affected both total per-pupil spending as well as per-pupil spending on particular categories of spending--core instruction, capital outlay, and general administration and support. In addition, there were relationships found between per-pupil spending and the share of dollars allocated to different categories of spending. For example, districts with high percentages of children in poverty spent less per pupil in total and on each category of expenditure. But, because these districts allocate a relatively large share of their dollars to core instructional expenditures, the differences in per-pupil spending on instruction are small.

This supports the assumption that core instructional expenditures are least affected by expenditure differentials across districts and suggests the types of tradeoffs that districts are making in their allocation decisions. In this and other research districts tend to spend more similar dollars per pupil on instruction than on other categories of expenditure.[26] This could be a result of collective bargaining agreements, a general priority given to instructional expenditures across districts, and state and federal rules and regulations that all lead to a high base minimum level of spending that all districts devote to instructional expenditures. This means that low spending districts allocate a relatively large share of their dollars to instruction and reduce spending on other functions, possibly capital expenditures. And, high spending districts can allocate a smaller share of their total expenditures to instruction and boost expenditures elsewhere.

Particular Structural and Policy Influences on Spending Decisions in California's School Districts

Many of the mechanisms and factors found to drive local allocative behavior in studies conducted in other states are also likely to some extent to drive local allocative behavior in California. All states participate to some extent in federal aid programs and have in place state categorical aid programs intended to compensate districts for particular district and student needs. In addition, state rules,

[26]See, for example, Hartman (1994).

regulations and mandates exist to some degree in all states. And, districts likely face similar minimum required levels to be devoted to particular functions for efficiency reasons. On the other hand, there are particular structural and policy factors that exist in California that may also affect local decisionmaking.

One factor particular to California is the restrictions on local ability to generate discretionary revenues. Virtually all States' school finance systems allow some local variation in expenditures based on differences in willingness to pay local taxes for education (Riddle, 1990). Inequalities resulting from differences in ability to pay have been recognized in court decisions in many states with the resulting school finance systems changed to rely less heavily on local property taxes. But, the combined result of school finance equalization and Proposition 13 has made the amount of local revenue available to support education controlled by state policy in California. The lack of ability to raise property or other tax revenues locally in California has come to the foreground both as the state has faced severe fiscal constraints to funding education and as there is growing interest in efforts to allow more local control over education decisionmaking, including budgetary decisionmaking.

A related issue is the growing state underfunding of particular education programs and the effect on local resource allocation decisions. As is likely true in many states, California has not fully funded most of the categorical aid programs or special allocation programs such as transportation, food services, and textbook purchases (Goldfinger, 1994). This has particular implications for local districts in California due to their limited ability to make up the shortfalls through local revenue generation. These underfunded programs place constraints on the use of all education dollars in school districts as dollars are shifted from general fund purposes to support mandated services. Two examples of large underfunded programs that have drawn a lot of attention in California are transportation services and special education programs (Goldfinger, 1994). For districts that rely heavily on transportation services or have a lot of special education students, for example, questions are raised as to what kinds of tradeoffs they are making in order to support these underfunded programs.

Finally, local districts and schools in California are heavily dependent on a state system of school finance that has become increasingly complicated and restrictive over time. Propositions 98 and 111, state basic revenue limits, and state categorical aid programs have created a multitude of complicated funding formulas. In addition, state

categorical aid programs have grown over time both in number and as a share of total state education dollars. These programs involve a variety of different implementation requirements, as well as monitoring and reporting functions. Also, as funding formulas for some categorical aid programs have become outdated and as the number of programs have grown, questions have been raised as to whether categorical aid continues to tie to need and as to collectively how the programs are affecting district spending. Further, the California Education Code provides a variety of restrictions over the allocation of education resources in California's school districts.

3. QUESTIONS GUIDING STUDY

The variety of mechanisms by which school districts receive revenues and the constraints to local spending decisions leave open questions as to how districts allocate education dollars, what tradeoffs they make in their allocation decisions, and ultimately what degree of flexibility they have to make resource allocation decisions. The education governance reform efforts call for new ways of financing public education. In designing such a system, we must first understand how public education is financed today in order to determine what changes are necessary, what changes are feasible, how to allocate resources under the new scheme, and who is affected and by how much. This information would provide a tool of general use to policymakers and school reformers needing to assess the fiscal feasibility and fiscal implications of education governance reforms.

The general policy issue and questions that follow have been developed from an extensive review of the literature on the mechanisms by which spending decisions are made and constraints to local decisionmaking as well as from a series of discussions held with school, district and county administrators and others in the education community involved in current education governance reform efforts.

POLICY ISSUE AND QUESTIONS

People in the schools, district offices, and county offices of education suggest that a lack of flexible funds is a major obstacle to local decisionmaking. They contend that reform efforts that try to decentralize decisionmaking often do little to change the fact that most districts and schools have discretion over the use of only a very small percentage of the money spent within their walls. If this is the case, changing the level of budgetary authority without addressing the constraints to spending those resources may result in little change under decentralized control.

There exist federal and state constraints that filter in their consequences to the district and school level, and then there are district and school level constraints that are collectively woven in complicated procedures. But, constraints vary in their degree and a resulting question is the extent to which they affect the behavior of local officials and how they affect that behavior. Further, it is likely that constraints affect different categories of spending and

different types of districts differently. To the extent that school districts today show similar patterns of spending, we may see little change in expenditure patterns under decentralization reforms that change only the level of budgetary authority. On the other hand, to the extent that we now find large variability in school district expenditure patterns, we may expect to find even more variability if fiscal decision making is moved to the local level.

There are a variety of possibilities for how school districts allocate their resources in support of K-12 education including: 1) All districts allocate resources the same; 2) Any variation that exists across districts in the allocation of their resources is random; or 3) Any variation that exists across districts in the allocation of their resources is systematic. In this case, variation in district allocations may reflect particular district or student characteristics.

Question. *In general, do diverse districts spend similar levels and shares of their dollars on particular spending categories?*

Previous empirical work[27], restrictions present in the California Education Code, and categorical aid funding restrictions suggest that districts will allocate similar shares of their dollars to particular spending categories. The share of dollars devoted to expenditures on classroom personnel and materials, for example, where the minimum is high due to a variety of reasons, is likely to be similar across districts even though the per-pupil spending may vary due to discretionary resources. The education code, categorical aid programs, and collective bargaining agreements all lead to high minimum expenditures on classroom personnel and materials. On other categories of expenditure which have a smaller base minimum level of expenditures required or where there are fewer restrictions governing the spending, districts may show greater flexibility in their spending decisions. For example, districts are likely to show more variation in the share and level of total expenditures they devote to maintaining school facilities which have lower minimum spending restrictions and are more discretionary in nature.

Question. *Are spending patterns affected by particular district characteristics including the size of the district, the type of district, the metropolitan status of the district, and the wealth of the community?*

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[27]See, for example, Nakib (1994) and NCES (February 1995).

There are constraints that affect all districts' spending decisions including mandates, restrictions on the use of categorical aid, rules in the state education code, and collective bargaining agreements. In addition, there are characteristics particular to districts that may also influence district spending decisions and district responses to those constraints.

The current school governance reform movements look to give those at the local level more control over education decisionmaking. There were 226 school districts in California in the 1993-94 school year that enrolled under 300 students. These school districts due to their small size provide a picture of how decisions would be made at more local levels of control under current rules and regulations governing education. One of the arguments surrounding decentralizing education decisionmaking, including budgetary decisionmaking, is that local control would allow for local decisions based on local conditions. In addition, it is often assumed that large districts spend a relatively large share of their dollars on bureaucratic functions leaving smaller allocations to the classroom. Therefore, one would expect these small school districts both to show greater variation in how they allocate their dollars as well as to allocate their dollars differently than larger school districts.

Further, elementary, high school and unified school districts likely show differences in the level and share of dollars they devote to different spending categories. Basic revenue limit aid sets per-pupil allocations the highest in high school districts followed by unified districts and then elementary districts. The question remains how high school and unified districts allocate these higher discretionary dollars across functions to increase both per-pupil spending on particular functions and the share of dollars allocated to different functions. It is likely that the share of dollars allocated to the classroom will be more similar than the share of dollars allocated to other functions as all districts need to devote a high minimum share of dollars to the classroom as set by the California Education Code. With similar shares of dollars going to the classroom, high school districts, due to their higher level of resources, will spend more per pupil on the classroom as well as more per pupil on other functions.

Metropolitan status is also likely to affect spending patterns for a variety of reasons. First, rural, urban and suburban areas face different geographic cost structures. For example, in different geographic locations it may cost different amounts to recruit and employ school personnel with similar characteristics into similar jobs. These are cost differences that are independent of decisions that school

districts make, for example, to hirer better educated or more experienced teachers. Although accurately measuring such geographic cost differences has presented a considerable challenge in education, a number of studies have produced such measures and do find differences between urban, suburban and rural areas.[28] These cost differences likely affect spending on some categories more than others. In addition, to the extent that districts are not compensated for these geographic cost differences, district allocations will reflect the tradeoffs that they make in allocating their dollars. Further, there are state programs that are particularly underfunded that affect some geographic areas more than others. One of these programs is transportation services (Goldfinger, 1994). As rural and urban areas tend to rely heavily on transportation services, these districts generally have relatively large per-pupil expenditures on these services and spend a relatively large share of their dollars on transportation services. Again, the question remains on which other programs there is the flexibility to subsequently reduce expenditures.

Finally, although the *Serrano* decisions combined with Proposition 13 have greatly limited the ability of local communities to raise additional revenues for K-12 education, there are still some opportunities to raise revenues locally--through bond issues, sale of property, and other local revenue sources. Research has found that communities with higher education levels and wealth not only have a greater ability to pay for education but also a higher willingness to pay (Riddle, 1990). If this is the case, wealthier communities may still find opportunities to raise discretionary resources above what is available in other districts. Further, to the extent that they do raise alternative revenue sources, these local resources likely have greater flexibility in their use than state or federal revenue sources.

Question. *Are spending patterns also affected by particular student needs in the districts, including the percentage of special education students, the percentage of minority students, the percentage of low income students, and the percentage of limited English proficient students?*

The federal government and state governments have long recognized that additional resources are required by districts to provide adequate services for special needs populations and have established categorical aid programs to compensate districts for costs associated with these

[28]See, for example, Chambers (1978 and 1980), Barro (1992), McMahon and Chang (1991) and NCES (October 1995).

services. There are categorical aid programs, as discussed in Section 2, that go to districts based on special education students, minority students, low-income students, and limited English proficient students in the districts. In addition to special needs students placing particular demands on districts, these categorical aid programs vary in the degree of restrictions they place on the use of education dollars and can affect district spending decisions in a variety of ways. First, these programs generally restrict the type of student to receive the funds and often the nature of the services to be provided. Further, to the extent that these sources of funds do not cover the full cost of providing services to these special population, they can restrict the use of general-fund revenues. In addition, these programs often entail administrative expenses as they involve complicated funding formulas, rules and regulations to implement the programs, recordkeeping and the filing of reports.

The special education program, by far the largest of the state categorical aid programs, provides an example of the restrictions that can be placed on district expenditures. The special education funding formula is based on providing services under one of three program models, each with a certain array of associated staff and, in some cases, a prescribed number of pupils per staff member. Special education is unique among all categorical programs in California as the mandate to provide special education services must be met, regardless of whether the resulting expenditures exceed the revenues received. Special education programs have never been fully funded and California school districts have experienced ongoing "encroachment" into general education funds to maintain special education services (Goldfinger, 1994). While districts with special education populations may have high per-pupil expenditures in total and in the classroom, discretionary resources are likely being pulled from other categories to support the underfunding of the program. This may result in a relatively small level and share of district dollars being devoted to some other categories of expenditure where there is the ability to cut back resources.

4. RESEARCH APPROACH AND METHODOLOGY

This section describes the research that was conducted to examine how districts allocate education dollars in California, the tradeoffs that they make in their allocation decisions, and ultimately what degree and type of flexibility they have to make resource allocation decisions. In addition, limitations with this research approach are also addressed.

RESEARCH APPROACH

Research was conducted in two principal areas employing a variety of analytic procedures.

The purpose of the first step of the research was to understand all of the types of spending that take place in school districts in California and to determine the size of those expenditures for each of the approximately 1,000 school districts in California for the 1992-93 and 1993-94 school years. This entailed building a large data base from several sources of data as described in Section 5. What distinguishes this first step of the research from other studies is the level of detail by which expenditures are determined across all school districts in California. As hundreds of types of spending take place in support of K-12 education, it was necessary to organize those expenditures into categories of expenditures. The definition of each category of expenditure and the determination of what expenditures to include in each category were based on studies done in California[29] and in other states[30] as well as on discussions held with people at RAND and with people inside school districts and county offices of education.[31]

Once this data base was built, the second step of the research was to examine how much variation there is in how school districts spend their dollars, where that variation occurs, and what district and student characteristics may help explain the variation in district spending--both the level of spending and the allocation of resources across categories. Three general procedures were used to analyze the data. These three procedures, to be discussed in more detail below, are: 1) summary statistics and measures of dispersion analyses; 2) bivariate analyses of the relationship between spending on each category

[29]See, for example, Hayward (May 1988).

[30]See bibliography for studies done in other states including New York, Indiana, and Wisconsin.

[31]See Section 6 for definition of categories and expenditures included in each category.

and district and student characteristics; and 3) multivariate analyses of how the level and share of spending on each category varies by district and student characteristics holding the other factors constant.

Summary Statistics and Measures of Dispersion Analyses

The first level of analysis uses a variety of measures to examine how school districts spend their education dollars and the degree of variation across districts in how they spend their dollars.

To examine the "typical" way that districts spend their education dollars across the defined categories of expenditure, means and medians are examined. Several measures of dispersion were then used to examine the degree to which individual districts vary about the averages--how tightly packed districts are around the average or whether there is a lot of scatter around the average. Researchers use a variety of measures to examine dispersion in data with each measure reflecting a different aspect of the distribution. Based on the measures used in other education research, this research reports the range, restricted range, standard deviation, Gini coefficient, and the coefficient of variation.[32]

The range is the difference between the highest and lowest value in the body of data. It indicates the difference between the two most extreme observations and so is subject to the influence of exceptional cases. Being based on only two values, it does not represent the variations in resources among all districts. The restricted range is defined as the difference between the objects at the 95th and the 5th percentiles. The outliers in the distribution are omitted but this measure again only measures the difference between two observations.

The standard deviation takes into account each observation to give a picture of the average size individual districts are off from the state-wide district averages. Assuming a normal distribution, about two-thirds of school districts lie within plus or minus one standard deviation of the average and about 95 percent of school districts lie within two standard deviations of the average. The standard deviation statistic is sensitive to the units in which shares are measured so that problems arise in comparisons of standard deviations when the units of measurement differ. The coefficient of variation statistic makes an adjustment for differences in the unit of measurement. The coefficient of variation is the standard deviation expressed as a percentage of the mean and so measures the percent of variation around the mean. A value

[32]See, for example, Berne and Stiefel (1984), Nakib (1994), Hirth (Fall 1994) and Monk (1990).

of 0 for the coefficient of variation would indicate that the object is distributed evenly across all school districts. While the coefficient of variation is not sensitive to the units in which shares are measured, it remains sensitive to extreme or outlying cases. The Gini coefficient is another univariate dispersion measure that is seen in the education literature. It is an economist's measure of income equality based on the Lorenz curve that indicates how far the distribution is from providing each percentage of a population with the same percentage of a variable, such as how far the distribution of expenditures is from providing each percentage of students with the same expenditure. Similar to the coefficient of variation, the closer the Gini coefficient is to 0, the less dispersion there is in the data. The Gini coefficient is sensitive to changes throughout the distribution, though not to extreme outliers.

Each of the above summary measures is reported in Appendix C for each of the six categories of expenditures as detailed in this study. The coefficient of variation is used in the policy sections of this report to make comparisons across categories of expenditure and to examine in which categories districts show more or less variation in their spending patterns. The coefficient of variation is indifferent to scale and so allows comparisons to be made across categories with very different base sizes.[33] The Gini coefficient and the coefficient of variation, both scale indifferent, are highly correlated.

Bivariate Analyses

The previous level of analysis detailed how school districts as a group spend their education dollars and the variation in those expenditures. The bivariate analyses begin to look at what district and student characteristics explain some of the variation that is found around the district averages for district general-fund expenditures. The goal is to begin to determine whether or not there are systematic differences in the ways that certain types of districts spend their dollars. Therefore, if we compare "like" districts are we likely to see particular resource allocation patterns? Or, do differences in spending patterns that are found match differences in student needs and district costs that can be clearly identified?

This level of analysis introduces the district and student characteristics thought to influence district spending decisions. Data from a variety of sources, as detailed in Chapter 5, were used to gather student and district characteristic information by school district in

[33]See, for example, results presented in Picus (January 1993).

California. Some of the district and student data are only recently available through the 1990 Census School District Special Tabulation Data Set which matches census data to school districts. The student and district characteristics data were matched to the school district financial data.

The bivariate analyses allow simple comparisons to be made of the level and share of spending on each category of spending by different types of school districts in different communities and with different student populations. For example, one can see the simple relationship between the percentage of special education students and the share of total dollars spent on classroom personnel and materials or the simple relationship between the size of the district and spending on district operations.

The results from these analyses are presented in Appendix E.

Multivariate Analyses

Multivariate regression analyses are used to examine the extent to which individual district and student characteristics influence district spending patterns holding the other factors constant. A series of equations are estimated with the independent variables in each equation being the same. The dependent variables are both per-pupil spending on each category of expenditure and the share of total dollars allocated to each category of expenditure (classroom personnel and materials; direct services; school facilities; school administration; other school; and district operations).

An extensive review of the education literature, as detailed in Chapter 2, was used to develop the district cost and student need factors thought to influence district spending patterns. The factors are: district size, district level of instruction (high school, elementary, or unified), percentage of children in poverty, percentage of special education students, percentage of limited English proficient students, percentage of minority students, metropolitan status, and median value owner-occupied housing.[34] In addition, two other independent variables are included in the regression model for specification purposes as they are expected to influence district spending. Those variables are: years of experience of teachers and education level of teachers.

[34]Issues related to multicollinearity and the effect on the coefficients are discussed in Appendix H.

The equation looks as follows with the dependent variable changing to account for different categories of expenditure.[35]

$$Classroom_i = \beta_o + \beta_1 Rural_i + \beta_2 Suburban_i + \beta_3 Midcity_i + \beta_4 Size_i + \beta_5 Unified_i + \beta_6 High_i + \beta_7 English_i + \beta_8 SpecialEd_i + \beta_9 Minority_i + \beta_{10} Poverty_i + \beta_{11} Housing_i + u_i$$

where,

RURAL[36] = Dummy variable equal to 1 if the district is classified as rural, 0 otherwise.

SUBURBAN = Dummy variable equal to 1 if the district is classified as suburban, 0 otherwise.

MIDCITY = Dummy variable equal to 1 if the district is classified as a mid-size central city, 0 otherwise.

SIZE = The number of students enrolled in the school district.

UNIFIED[37] = Dummy variable equal to 1 if the district is a unified school district (K-12), 0 otherwise.

HIGH = Dummy variable equal to 1 if the district is a high school district (9-12), 0 otherwise.

ENGLISH = The percentage of limited or non-English speaking students in a district.

SPECIALED = The percentage of special education students in a district.

MINORITY = The percentage of minority students in a district.

POVERTY = The percentage of students in the district who qualify for a free- or reduced-price lunch.

HOUSING = Median value owner occupied housing.

The regression equations are estimated using both the 1992-93 and 1993-94 school year data which resulted in 1,998 observations. The data were pooled based on test results[38] that suggested that the same regression model applied to both years. For each equation, I test the hypothesis that the specified variables are significant predictors of spending, both independently and jointly. T-tests are used to determine

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[35]See Section 5 for data sources and Appendix I for definition of variables. See Appendix A for issues of missing data.

[36]URBAN serves as the reference group by which RURAL, SUBURBAN, and MIDCITY are measured and so is excluded from the regression equation.

[37]ELEMENTARY serves as the reference group by which UNIFIED and HIGH are measured and so is excluded from the regression equation.

[38]The Chow-test was used and the model was run separately for the 1992-93 and 1993-94 year data with the coefficients tested to see if they were significantly different from each other.

whether the individual parameters are significant predictors of the level and share of spending on each category of spending, and F-tests are used to test jointly whether all of the parameters or subsets of the parameters are significant predictors of spending.

The regression equations were run separately with and without the smallest school districts in California. Studies of school district spending tend to exclude or separate the smallest districts in analyses as these districts are often large outliers and they can vary greatly in their per-pupil spending from year to year due to the gain or loss of a few students.[39] In addition, in looking at the percentage of special needs students, the addition or subtraction of a few students greatly influences the percentages from year to year. Further, some of the rules and regulations in the education code exclude the smallest districts from their application. There is no consistent definition of what is considered small in these studies or in the education code. I have, therefore, used quartiles to separate the smallest districts. The smallest 25 percent of districts in California enroll less than or equal to 300 students. In support of this division, the Chow test was used to test the stability of the coefficients to see if the data could be pooled for districts enrolling no more than 300 students and all other districts. The results of the test supported the conclusion that separate estimates of the coefficients were needed for these districts.

The full results from these regression analyses are presented in Appendix F. Further, in a second set of equations, the dependent variables are adjusted for a geographic cost index. Because of locational cost differentials, identical expenditures may not have the same purchasing power in different districts. These cost-adjusted expenditures are intended to some extent to account for geographic cost differentials across districts. Although the concept of adjusting for cost differentials in making comparisons in expenditures across geographic locations is generally accepted, the most appropriate set of adjustments to be used for these purposes has yet to be fully agreed upon or developed.[40] The cost adjustment used here is based on a 1995 National Center for Education Statistics' report on public school teacher cost differences. To allow the reader some insight into the impact of geographic cost adjustments to the actual data, cost adjusted expenditure information, and the limitations of that information, is presented in Appendix G.

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[39]See, for example, Timar (Summer 1994), Riddle (July 1990), or NCES (February 1995).

[40]See Chambers (1978 and 1980), McMahon and Chang (1991), Barro (1992), NCES (October 1995).

LIMITATIONS WITH RESEARCH APPROACH

The research approach developed in this study seeks to understand the concept of flexibility through assessing the restrictions placed on the ability of school districts to make decisions over the allocation of their resources and current district allocative behavior. The restrictions on local decisionmaking come from a variety of sources that were examined including federal and state categorical aid programs, the California Education Code, the inability to raise discretionary resources locally, the underfunding of particular programs, collective bargaining agreements, and federal and state mandates. The context in which the allocation process develops was used as a basis for understanding how districts use their funds. But, restrictions vary in their degree and enforcement and ultimately what matters is how they affect behavior. The next step of the analysis, then, was to determine how districts allocate their dollars, where districts show more or less variation in their allocation decisions, and how those decisions are influenced by district and student characteristics. Flexibility in this approach is examined though current allocations, evidence as to where there are constraints on those allocations and possible sources of the constraints. This approach allowed the examination of allocation practices in all school districts in California.

There are limitations with this approach and there are other approaches that could be used to further develop the concept of flexibility--each with relative strengths and weaknesses. One limitation with this approach is that it is difficult to know the extent to which schools have flexibility in making decisions where districts do not. Most education dollars now flow to school districts with district offices paying for many of the services of schools directly and relatively small amounts of money being distributed down to schools. A cornerstone of many of the current reform efforts is to allow more local school decisionmaking. Even if the same restrictions face schools as currently face districts, it may be that different governance structures in schools allow for more flexibility to work within the constraints. Another limitation is that district flexibility may be greater than the allocation patterns would suggest. For example, even if all districts allocate similar dollars to classroom teachers, some districts may have greater flexibility in hiring teachers, promoting teachers, classroom instruction, etc. While determining how districts allocate their resources provides insight into how much flexibility they have to make spending decisions, it does not show how much flexibility they have in the actual processes which those resources support. Another limitation is that looking at the allocation of resources does not provide insight

into who is actually making the allocation decisions--school boards, superintendents, district or school administrators, teachers, etc. And, it does not determine which particular restrictions are actually enforced and/or binding and which are not.

Other methods of measuring flexibility would address some of these limitations. As each approach has relative strengths and weaknesses, these other methods could be used in conjunction with the method developed in this study to provide a deeper understanding of local flexibility in making spending decisions. An important addition to measuring flexibility would be to gain an understanding of the organizational structure, environment, and policies by which districts and schools are managed as these are likely important factors in shaping actual allocation decisions. Included in this would be an assessment of how budgetary decisions are made and by whom they are made in a sample of districts and schools. In addition, a survey of those decisionmakers could provide a picture of how much flexibility they feel they have in making decisions and what are the restrictions to that flexibility. Site visits of districts and schools could be used to assess the impact of those decisions. Further, as restrictions placed on overall district spending do not necessarily preclude variation in spending patterns among schools within districts, an additional approach would be to examine how resources are allocated at the school level. A few studies done in other states have begun to examine how resources are allocated at the school level. Currently in California, there is no central source that collects budget information at the school level. This method would rely on collecting and analyzing individual school budgets. As there are over 6,000 schools in California, this would likely involve a small sample of schools in California. Further as most resources now flow to school districts with district offices paying for many of the services of schools directly, flexibility at the school level may in large part be controlled at the district level. A related area of research would look at the extent to which allocation decisions at the school level are controlled at the district level.

5. DATA SOURCES[41]

This section describes the data sources that were used in this study. The data sources can be divided into two categories--fiscal data which were used to determine school district revenues and expenditures and non-fiscal data which include variables representing student and district characteristics. Data were collected for the 1992-93 and 1993-94 school years, except where stated otherwise.

FISCAL DATA SOURCES[42]

The first area of research in this study determines how school districts spend their education dollars. This required using three data sources and building a large data base that combined these three sources.[43] The data sources move from broad sources of data that allow one to look at all school districts in California, (i.e. the state expenditure reporting forms), to more narrow sources of data that allow one to look in more detail at a subset of school districts, (i.e. the matrix data and district detailed budgets).

State Expenditure Reporting Forms, the J200

Each year, the California Department of Education collects detailed revenues and expenditures for each school district and county office of education in the state across a number of categories as defined by the state. School districts record this information on the J200 forms. The California Department of Education makes the information collected on these forms available on a database and the information is included separately for each school district. I am using the databases for the 1992-93 and 1993-94 school years, the latest years for which data were available. In the 1992-93 and 1993-94 school years, there were 1,001 and 997 school districts in California, respectively.

The J200 forms report expenditures under what are called objects of expenditures. All K-12 expenditures are classified into particular objects of expenditures as defined by the state. Examples of objects of expenditures are teachers' salaries, instructional aides' salaries, textbooks, librarians' salaries, pupil transportation salaries, travel

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[41]See Appendix A for issues of data reliability and other data issues, such as missing data.

[42]Additional detail on the fiscal data sources is provided in Krop, et. al. (1995).

[43]For a description of how these three data sources were combined, see Krop, et. al. (1995) Section 2 and Appendix B.

expenses, clerical and other office salaries, utilities, and housekeeping services. There are about 100 objects of expenditures in all. The state defines each of these objects of expenditures and what is to be included in each. These definitions are included in the "California School Accounting Manual," published by the California Department of Education.

In the J200 forms, these objects of expenditures cut across different funds of expenditures. The school districts spend education moneys out of a variety of funds which are used for accounting purposes. The principal fund through which most of the expenditures are recorded is the general fund. A district's general fund controls general-purpose money. The funds other than the general fund include the cafeteria fund, the deferred maintenance fund, the building fund, and the self-insurance fund. These are funds used to set aside money that can only be used for defined purposes. It is the general fund expenditures that this report will be interested in explaining as that is the bulk of the spending and it is also the flexible money.

The J200 data provides a good base for determining how school districts spend their education dollars. Limitations with the data required the collection of other sources of data to supplement the J200 data. Some of the objects of expenditures in the J200 forms are too broadly defined to fully understand the expenditures they include. For example, the objects of expenditure for benefits do no distinguish benefits to different types of individuals such as for teachers, librarians, maintenance workers, school administrators, superintendents, or clerical workers. In addition, there are several large "other" objects for which it is difficult to tell what is included in them or the size of the various expenditures included in the objects.

Further, the J200 form does not distinguish expenditures taking place at the district office from expenditures taking place at the schools. For many objects of expenditure, such as teachers' salaries, librarians' salaries, school administrators' salaries, and superintendents' salaries, we know if they are taking place at the school site or at district offices. But for several objects of expenditures we do not know where the expenditures are taking place or the split between the school and the district office. For example, all clerical salaries are recorded in one object. But, clearly some clerical salaries support workers in the district offices and other clerical salaries support workers in the school offices. The same limitation occurs for objects such as utilities, maintenance, and travel. And finally, even within the school, some of the objects of expenditures are too broad to determine where they are taking place at

the school site. For example, one of the objects of expenditures is called "equipment." We do not know if this is equipment purchases for the classroom, school facilities, or school athletic programs.

To address these limitations in the J200 data set, data were sought from other sources.

Matrix Data

Beginning in the late 1980s, the California Department of Education each year surveys a number of school districts to obtain more detail on specific objects of expenditures on the J200 forms. State officials refer to this data as the "matrix data." I collected the matrix data for the 1991-92 and 1992-93 school years, the latest years for which data were available.[44] For each year, the matrix data contained information on 221 school districts, or 22 percent of school districts in California. As the matrix data contain the largest districts in the state, the 221 districts surveyed contain 79 percent of students in California's school districts.

The matrix data contain detailed information on particular objects of expenditure on the J200 forms. The objects of expenditure that are detailed were chosen by the California Department of Education. Of particular interest to this study is the detail that the matrix data provide on what types of benefits are being paid and the size of those benefits to different groups of recipients. For example, the matrix data broke the object of expenditure called total Employee Benefits in the J200 data set into benefits going to about 20 different categories of employees.

The matrix data contained these more detailed objects of expenditure for each of the districts surveyed and so allowed considerable insight into the objects that were detailed. But, limitations in the matrix data again required looking at another source of information. The matrix data covered only particular objects of expenditures and there were other objects which were still too broadly defined to understand what expenditures they included. For example, the matrix data did not provide information on what was included in some of the "other" objects in the J200 forms. And, the matrix data did not provide information on the split of some objects between school and district office expenditures, such as for clerical salaries. The next level of data was used to look at these issues.

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[44]The matrix data lags about one year behind the J200 data.

Specific School District Detailed Budgets

To answer specific questions on what was included in particular objects or how particular objects were split between school and district office expenditures, I collected detailed school district budgets. The detailed budgets provide the base budget information which districts use to complete the J200 or matrix data forms. The detailed budgets were used to gather information that was not provided in the J200 forms or in the matrix data. In total, five detailed school district budgets were collected.[45] These budgets represented different size school districts and districts in urban, suburban, and rural areas. In addition to collecting these budgets, extensive meetings and telephone conversations were conducted with the superintendents or budget directors of these districts to provide greater understanding of their detailed budgets and to answer specific questions on some of the objects of expenditures contained in the J200 forms.

Other Sources of Fiscal Data

To look at expenditure patterns for the special needs populations, I collected what is referred to as the J380 data set. This data set shows the same total expenditures on K-12 education as those shown on the J200 data set. But, while the J200 data set breaks this total spending into particular objects of expenditure, the J380 data set breaks this total spending into expenditures on particular K-12 programs. For example, the J380 data set divides total expenditures into expenditures for such programs as regular education, special education, Chapter 1, and Chapter 2.

DISTRICT AND STUDENT CHARACTERISTICS DATA SOURCES

To collect information on district and student characteristics for each school district in California, I used a number of different data sources. All of the data were collected for the 1992-93 and 1993-94 school years, where available. Table 5.1 lists the district and student characteristics, the source of data on each characteristic, and the school years for which the data were available.

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[45]This is only a small sample of school districts in California and great care must be taken in making any generalizations from these districts to other school districts in the state. See Appendix A in Krop et. al. (1995) for an explanation of how this information was used.

Table 5.1

District and Student Characteristics Data Sources[46]

Characteristics	Data Source	Year
District Size	California Basic Education Data Systems	1992,1993
Unified/High School/Elementary	California Basic Education Data Systems	1992,1993
Urban/Suburban/Rural	Common Core of Data	1992
Teacher Cost-of-Living Index	NCES Study	----
Median Value Housing Property	Common Core of Data	1990
Limited English Proficient Students	California Basic Education Data Systems	1992,1993
Minority Enrollment	California Basic Education Data Systems	1992,1993
Special Education Students	Common Core of Data	1992
Percentage Children Below Poverty	Common Core of Data	1990
Average Teaching Years for Teachers	California Basic Education Data Systems	1992,1993
Educational Level of Teachers	California Basic Education Data Systems	1992,1993
Teachers' Salaries	J90 Data Set	1992,1993

The California Basic Education Data Systems (CBEDS), maintained by the California Department of Education, has a number of different data sets on California's school districts and students. The data sets contain information on such areas as student enrollments, student ethnicity, teacher characteristics, and student language skills. This information is collected yearly, with the latest data available at the time of this study being for the 1993-94 school year. The J90 data base, which is also collected yearly by the California Department of Education, has teacher salary information.

The Common Core of Data(CCD) comes from the National Center for Education Statistics(NCES), U.S. Department of Education. The CCD is NCES's primary database on elementary and secondary education in the United States. The CCD compiles data from a variety of data sources. At the time of this research, the latest year for which the CCD was available was for the 1992-93 school year. The data used in this report on socioeconomic characteristics and the metropolitan status of school districts are from 1990 census data which are also contained in the CCD. Through the Census Mapping Project sponsored by NCES, the Census Bureau has produced these special tabulations of 1990 census data matched to school districts.

[46]See Appendix I for definition of variables.

6. DESCRIPTION OF CALIFORNIA SCHOOL DISTRICTS

Using the data sources described in Section 5, this section will provide a brief description of California's school districts in the 1993-94 school year before turning in the following sections to the research results and policy issues.

CALIFORNIA SCHOOL DISTRICTS

In the 1993-94 school year, the latest year for which data were available, California had 997 school districts located within 58 counties. School districts in California are classified as either elementary(K-8), high school(9-12), or unified(K-12). Table 6.1 provides information on the number of each type of school district in California and on the number of students enrolled in each type of district.

Table 6.1

School Districts and Enrollments, 1993-94

Type of District	Number	Enrollment
Unified	307	3,679,775
High School	102	441,115
Elementary	588	1,096,814
TOTAL	997	5,217,704

While there are more elementary districts than unified and high school districts together, most students, about 70 percent, are enrolled in unified school districts. In total, there were approximately 5.2 million students enrolled in school districts in California in the 1993-94 school year. To give one an idea of the undertaking, California enrolls more students than any other state and is followed by New York with an enrollment of 2.7 million students for the 1993-94 school year (National Center for Education Statistics, 1994).

Table 6.2 provides a look at the size of school districts in California. The table shows the great diversity that exists in the size of school districts across California.

Table 6.2

Size of School Districts in California, 1993-94

Size of District	Number of Districts	Percentage of Districts	Enrollments	Percentage of Enrollments
Under 500 Students	316	32	65,982	1
500 to 1,000 Students	126	13	90,538	2
1,001 to 15,000 Students	475	48	2,235,929	43
15,001 to 50,000 Students	74	7	1,792,357	34
Over 50,000 Students	6	1	1,032,898	20
TOTAL	997	100	5,217,704	100

NOTE: Columns may not add to totals due to rounding.

As Table 6.2 shows, there are many very small school districts in California and a few very large school districts. There are 316 school districts with under 500 students accounting for 32 percent of all districts but enrolling only one percent of students. At the other end of the spectrum, there are six school districts in California with over 50,000 students that enroll 20 percent of all students. The largest group of students are in school districts that enroll between 1,001 and 15,000 students. These districts enroll about 2.2 million students or 43 percent of students in California.

Table 6.3 provides a picture of the demographic makeup of the students enrolled in school districts in California. As there is a lot of diversity across California's school districts in these factors, the table provides the average, minimum, maximum, and standard deviation across school districts for each factor listed.

Table 6.3

Demographic Makeup of Students, 1993-94

	Average (Percentage)	Minimum (Percentage)	Maximum (Percentage)	Standard Deviation (Percentage)
Children in Poverty	18	0	100	14
Special Education Students	7	0	28	5
Minority Students	38	0	100	27
Limited English Proficient Students	16	0	94	16
Enrollment Growth, 1992-93 to 1993-94	2	-44	117	9

As Table 6.3 shows, on average, about 18 percent of students in California's school districts live in families below the poverty level,

7 percent of students are tested as needing special education programs, 38 percent of students are non-white, and 16 percent of students have limited English proficiency. Further, California's school districts had about a 2 percent growth in enrollments between the 1992-93 and 1993-94 school years. The more urban areas of California are generally experiencing enrollment growth rates slightly below this average while the Foothill and Sierra counties and the inland valleys of Southern California are experiencing the most rapid growth rates. The minimum and maximum values show the range between which these student factors fall across districts. The standard deviations give a sense of the average size individual districts are off from the state-wide district averages. The minimum and maximum enrollment growth numbers in Table 6.3 are in school districts in California with less than 50 students and so their enrollment growth figures are very sensitive to small absolute increases or decreases in student enrollments.

CALIFORNIA K-12 EXPENDITURES

Table 6.4 shows 1993-94 K-12 expenditures in California as reported on the state expenditure reporting forms completed by all districts in California.

Table 6.4

K-12 Expenditures in California, 1993-94

	K-12 Expenditures (Millions of Dollars)	Percentage of Total K-12 Expenditures
School Districts:		
General Fund	21,910	75
Other Funds	5,001	17
County Districts:		
General Fund	1,331	5
Other Funds	211	1
State Operations	610	2
TOTAL	29,063	100

NOTE: These are unduplicated school district and county expenditures as recorded in the J200 and J400 forms. This does not include spending from the adult education fund or the child development fund, which are not included as K-12 spending. This also does not include spending by Joint Powers Agencies. State operation expenditures are from the governor's budget and are included here to arrive at total K-12 expenditures.

In total, about $29 billion was spent on K-12 education in California in 1993-94. The majority of money is spent by the school districts out of school districts' general funds. This represents about $22 billion or 75 percent of total K-12 expenditures in school year 1993-94. The other district funds are special set-aside funds such as a

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building fund, deferred maintenance fund, and self-insurance fund. In total, school districts accounted for 92 percent of all K-12 expenditures. County offices of education account for another $1.5 billion or 6 percent of total K-12 expenditures. County offices of education often run their own schools, primarily for special needs populations. In addition, county offices of education provide administrative functions to school districts. State operations primarily cover expenditures on the California Department of Education and state repayment on debt incurred for school construction[47].

This research focuses on the almost $22 billion in district general-fund spending as this is the bulk of the spending and it is the general-purpose money.

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[47]$77 million is the California Department of Education Operations and $508 million is payment on general obligation bonds.

7. ORGANIZATION OF FISCAL DATA

Hundreds of types of spending take place in school districts in support of K-12 education. To provide a complete picture of all of the types of school district expenditures and compare expenditures across districts, it is necessary to develop a means by which to organize those expenditures. This section describes how K-12 expenditures have been organized into categories of expenditures for this research.

ORGANIZATION OF DATA

District general funds support a wide variety of K-12 expenditures. The definition of categories of expenditure used to organize those expenditures initially came from examining what others had done in California and in other states.[48] Using this information as a base, discussions were held with school administrators, district administrators, and other education researchers to help further define the categories of expenditure, define all of the different types of expenditures that take place in support of K-12 education, and place those expenditures in the appropriate categories.[49]

The organization of school district general-fund expenditures to be used throughout this report is shown in Figure 7.1.

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[48]For example, Hayward (1988) documented expenditures as classroom costs, other school site costs, district and county costs, or state costs.

[49]See research done in previous report, Krop, et. al. (1995), for how it was decided which expenditures to include in each category and the difficulty in placing certain types of expenditures.

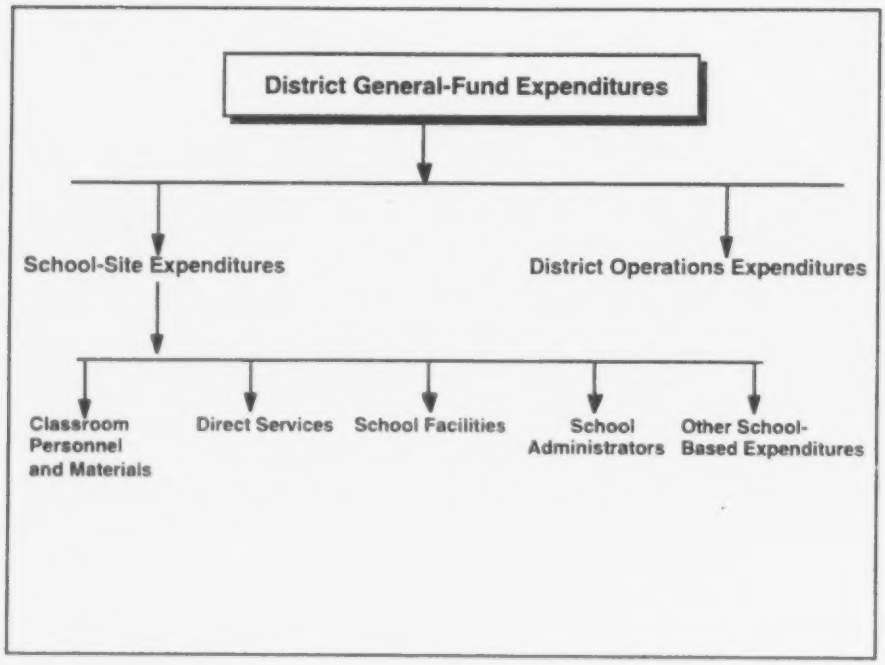

Fig. 7.1--Organization of District General-Fund Expenditures

Each school district's general-fund expenditures are divided into a variety of expenditure categories, as shown in Figure 7.1. The district general-fund expenditures are initially divided between school-site expenditures and district operations expenditures. School-site expenditures are further divided into five categories as follows:

- *Classroom personnel and materials* includes expenditures on teachers' salaries and benefits, instructional aides' salaries and benefits, textbooks, and instructional supplies and equipment.

- *Direct services* includes expenditures on services provided by the school directly to the student such as food services, library services, pupil transportation services, and health, guidance, and welfare services.

- *School facilities* includes expenditures related to school maintenance, utilities, housekeeping, and rentals and leases.

- *School administrators* includes the salaries and benefits for principals and vice-principals of schools.

- *Other school-based expenditures* includes school office expenditures for office equipment and clerical workers' salaries and benefits, and miscellaneous other school-site expenditures including school insurance, instructional consultants, and a variety of contracted services.

In addition to school-site expenditures, school districts make expenditures on district operations. These are expenditures that take place at the district offices of education including expenditures on superintendents' salaries and benefits, clerical salaries and benefits for staff at the district offices, travel for district administrators, and equipment and utilities for district offices.

Each school district's general-fund expenditures were divided into these categories of expenditures as the base for further analyses. A detailed breakdown of what expenditures are included in each category of expenditure and the size of those expenditures for the 1993-94 school year are included in Appendix B.[50]

[50]Krop, et. al. (1995) Appendix B provides similar information for the 1992-93 school year.

8. SCHOOL DISTRICT SPENDING PATTERNS

Previous empirical work, restrictions present in the California Education Code, and categorical aid funding restrictions suggest that districts will allocate similar shares of their dollars on particular spending categories. The share of dollars devoted to expenditures on classroom personnel and materials, for example, where the minimum is high due to a variety of reasons is likely to be similar across districts even though the per-pupil spending may vary due to discretionary resources. The education code, categorical aid programs, and collective bargaining agreements all lead to high minimum expenditures on classroom personnel and materials. On other categories of expenditure which have a smaller base minimum level of expenditures required or where there are less restrictions governing the spending, districts may show greater flexibility in their spending decisions. For example, districts are likely to show more variation in the share and level of total expenditures they devote to maintaining school facilities which have lower minimum spending restrictions and are more discretionary in nature.

This section examines how districts allocate their dollars, where districts show more or less variation in their allocation decisions, and preliminary evidence as to what kind of tradeoffs districts are making. The next Sections will then look at how those decisions are influenced by district and student factors.

SCHOOL DISTRICT GENERAL-FUND SPENDING ON EACH CATEGORY OF EXPENDITURE

Across all school districts in California, Table 8.1 shows for the 1993-94 school year the results on how much was spent on each category of expenditure, the average district per-pupil expenditure on that category, and the average percentage of total spending districts allocate to the particular category of expenditure.[51]

[51]For a complete listing of each of the expenditures included in each category and the size of each of the expenditures for the 1993-94 school year, see Appendix B.

Table 8.1

District General-Fund Expenditures, 1993-94

	Total Expenditures (Millions of $)	Per-Pupil Expenditures	Percentage of Total Expenditures
Classroom Personnel and Materials	13,531	2,685	61
Direct Services	1,493	291	6
School Facilities	2,456	549	12
School Administrators	984	206	5
Other School	1,620	336	7
District Operations	1,885	415	9
Undistributed Transfers[52]	-59	-18	-.4
TOTAL	21,910	4,464	100

NOTE: Columns may not add to totals due to rounding.

In total, school districts spent about $21.9 billion out of their general funds for the 1993-94 school year with the majority of this spending, about $13.5 billion, spent on classroom personnel and materials. The average total per-pupil general-fund expenditure across all school district in California was $4,464 in the 1993-94 school year. Average per-pupil classroom personnel and materials spending represented $2,685 of this total. On average, California school districts spent about 61 percent of their general fund on classroom personnel and materials.[53] The second largest category of expenditure, school facilities, accounted for about 12 percent of general-fund expenditures. And, district operations, on average, accounted for about 9 percent of district general fund expenditures. The share of dollars allocated to each of the categories of expenditure as shown above for the 1993-94 school year are very similar to the figures for the 1992-93 school year as documented in a previous report (Krop, et. al., 1995).

VARIATION IN GENERAL-FUND EXPENDITURES ACROSS SCHOOL DISTRICTS

The previous subsection presented how school districts on average spend their education dollars. The next question, then, is how the levels and shares of dollars allocated to different spending categories vary across districts. Summary statistics for each of the expenditure categories provide some evidence as to how districts make spending decisions.

[52]Undistributed transfers are interprogram, interfund, or interagency transfer payments. These are a negative number and are subtracted out of district general fund expenditures to avoid double counting expenditures.

[53]This is similar to results found in studies done in New York, Florida, and Milwaukee.

Variation in Expenditures Across Categories

Across spending categories, districts show considerably more variation in per-pupil spending in each of the different spending categories than they do in the allocation of dollars across spending categories. This suggests that while districts may have different size per-pupil dollars to work with, and this is reflected in the variation in per-pupil spending in each category, districts still allocate similar shares of their dollars to particular spending categories. Specifically, there is very little variation in school districts' allocation of dollars to classroom personnel and materials. More variation is found in the allocation of resources to other spending categories, direct services in particular. These results are shown in Figure 8.1.

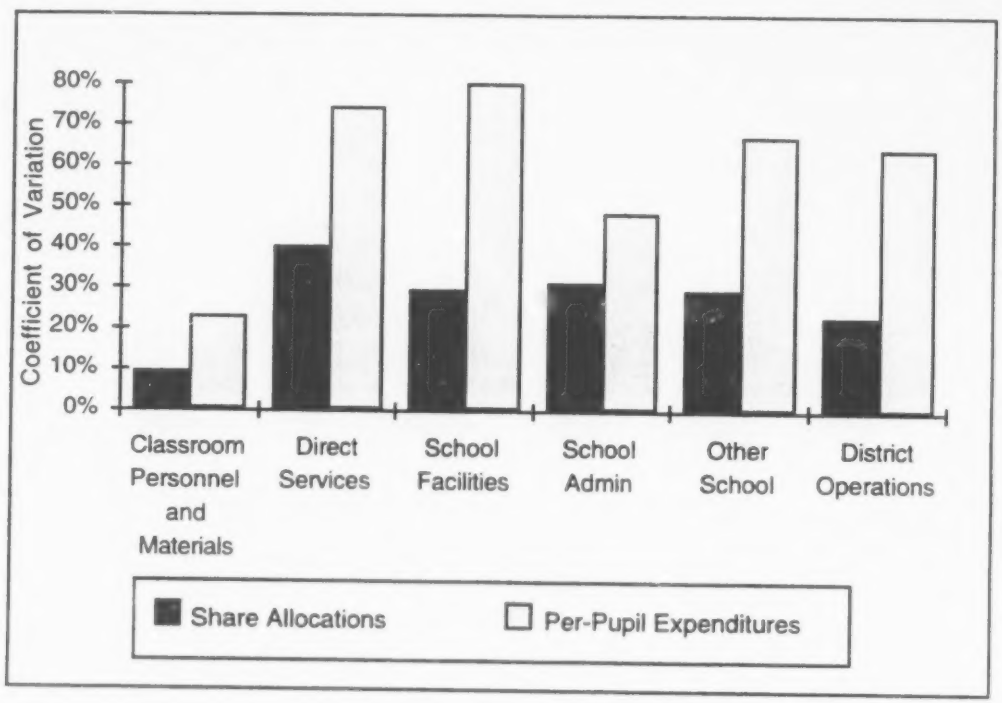

Figure 8.1--Variation in the Share of Dollars Districts Allocate to Each Spending Category and in Per-Pupil Spending on Each Category

There is little variation in school districts' allocation of dollars to classroom personnel and materials, with the coefficient of variation being about 9 percent. There are more rules, regulations, and contracts guiding spending on classroom personnel and materials than on the other categories of spending. For example, the education code

states that elementary, high school, and unified districts must allocate 60 percent, 50 percent, and 55 percent, respectively, of the district's "current expense of education" for salaries of classroom teachers. As salaries of classroom teachers are a large share of classroom personnel and materials expenditures, it is not surprising that districts tend to spend similar shares of their dollars on classroom personnel and materials. There is likely variability in how districts allocate resources on top of that minimum, but the minimum serves as a high enough base that discretionary spending on top of that minimum is not likely to have a big effect on the total share of resources allocated to the function.

Districts also show relatively less variation in the share of dollars allocated to district operations than some of the other categories. There are constraints that result in a relatively high minimum level of resources devoted to this category as well. For example, all district offices regardless of their size tend to have a superintendent, a business chief official to manage the district's financial resources, and transportation and food services managers to comply with the rules and regulations governing the provision of these services.[54]

There is considerably more variation in other categories of expenditure both in the level and share of resources districts allocate to each category. These categories tend to have lower minimum required levels of expenditure and so are more affected by how districts decide to allocate discretionary resources to them.

There is large variation in per-pupil expenditures on all categories of expenditure other than classroom personnel and materials. In particular, school facilities shows a great deal of variation with the coefficient of variation on per-pupil spending being 80 percent. All districts spend similar shares of their dollars on classroom personnel and materials. This means that districts with more discretionary resources can have relatively high per-pupil spending in the classroom and still have "extra" discretionary dollars to spend on other categories of expenditure, such as school facilities and direct services. On the other hand, districts with few discretionary resources--whether because they are low spending, underfunded, or face other constraints--may show particularly small per-pupil expenditures on such categories of expenditure.

Box-and-Wisker plots help explore these spending patterns in greater detail. Figure 8.2 shows the distribution of per-pupil spending

[54]See, for example, Schmieder and Townley (1994).

on each category of expenditure by school district in California and Figure 8.3 shows the distribution of the share of dollars allocated to each category by school district. A box-and-wisker plot provides a variety of information on the distribution of expenditures across districts. The line in the middle of the box represents the median or 50th percentile of the data. The box extends from the 25th percentile to the 75th percentile. The lines emerging from the box are the wiskers and they extend to the upper and lower adjacent values.[55] Circles outside the adjacent values are considered outside values and are individually plotted.

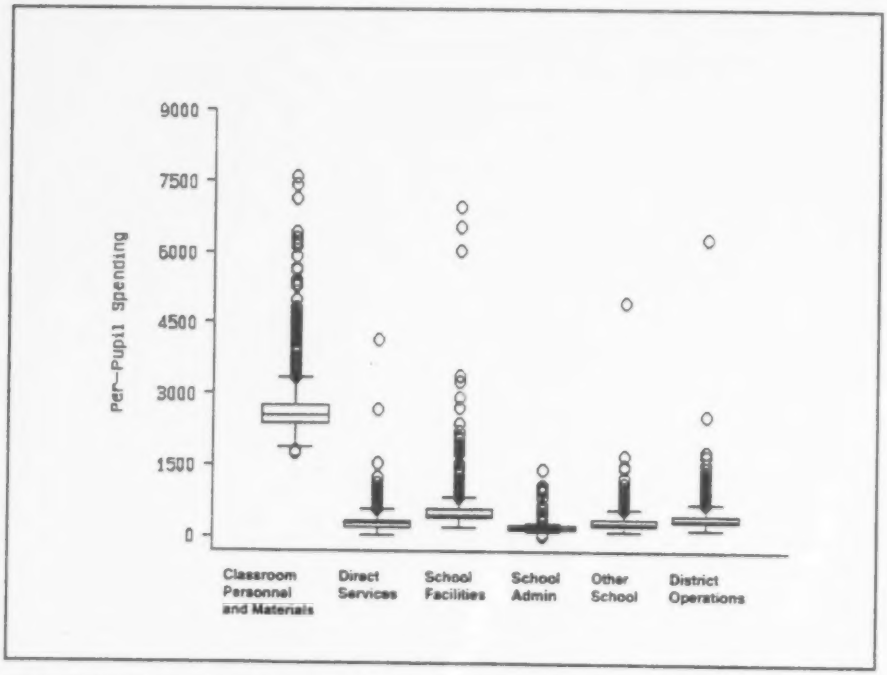

Figure 8.2--Distribution of per-pupil spending on each category of expenditure.

[55]Adjacent values are formally defined as three-halves the interquartile range rolled back to where there is data.

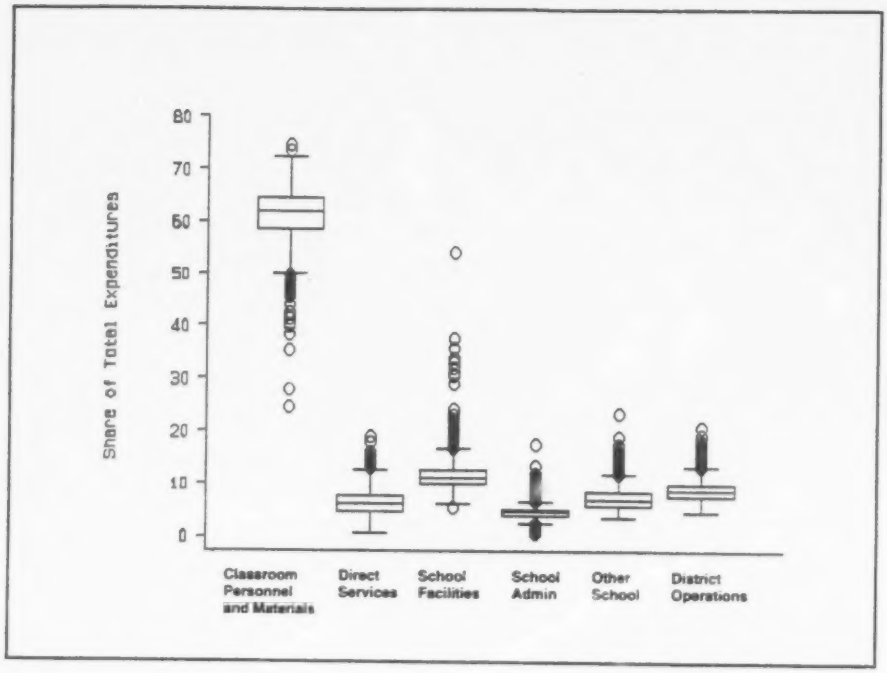

Figure 8.3--Distribution of the share of total expenditures allocated to each category of expenditure.

A few interesting patterns appear from these pictures that suggest how districts make spending decisions. First, the per-pupil spending distributions show considerable spread upwards and very little spread downwards. This suggests that there is generally a minimum level of spending that all districts devote to a given expenditure category with flexibility above that minimum. These minimums are low for categories other than classroom personnel and materials. Further, the few largest positive outliers in each category tend to be the same three districts, each enrolling fewer than 50 students.

Looking at the share of dollars districts devote to each category of expenditure provides additional details on district spending decisions. While the spread for per-pupil spending on classroom personnel and materials was upwards, the spread for the share tends to be downwards. The minimum share of expenditures each district must devote to salaries of teachers, as directed in the California Education Code, does not apply to districts with an average daily attendance of less than 101. Some of these districts in the low end of the distribution are small school districts. Some of the other districts in the low end of the distribution are high total per-pupil spending districts. Because these districts are high spending, they can have

relatively high per-pupil expenditures on classroom personnel and materials while devoting a relatively small share of their dollars on the category. Their additional discretionary dollars are going to other categories and boosting their share of expenditures elsewhere. This can be seen by looking at the other categories of expenditure where the spread is again upwards. Districts are devoting discretionary dollars to boost both the level and share of dollars devoted to other expenditure categories, particularly school facilities.

9. THE EFFECT OF DISTRICT CHARACTERISTICS ON DISTRICT SPENDING PATTERNS

Several constraints affect all California school districts' spending decisions including mandates, restrictions on the use of categorical aid, rules in the state education code, and collective bargaining agreements. In addition, there are characteristics particular to districts that may also influence how districts spend their money and how they respond to particular constraints. The previous section found that there is variation in district spending decisions, both in per-pupil spending on particular spending categories and in the allocation of dollars across spending categories.

This variation in district spending decisions can come from a variety of factors. Common constraints may have differential effects across school districts due to the unique characteristics of school districts. These characteristics include demographics, social and economic characteristics, and district-level policies. This section examines the extent to which specific district characteristics influence spending decisions in California's school districts. These characteristics include: district size, district type (elementary, high, or unified), wealth, and metropolitan status. The next section will then turn to the effect of student characteristics on district spending patterns.

INFLUENCE OF SIZE ON DISTRICT SPENDING PATTERNS

The current school governance reform movements seek to give those at the local levels more control over education decisionmaking. One of the arguments surrounding decentralizing education decisionmaking, including budgetary decisionmaking, is that local control would allow for local decisions based on local conditions. Very small school districts in California, enrolling fewer than 300 students, provide some insights into how decisions would be made at more local levels of control under current rules and regulations governing education. In particular, do these small school districts show greater variability in their spending decisions and do they make different spending decisions than do larger size districts?

Tables 9.1 and 9.2 show the level and share of dollars, respectively, that different size districts devote to each of the categories of spending. In addition, the Tables show the variation in spending in each of the categories for the different size districts.

Table 9.1

Variation in Per-Pupil Spending in Different Size Districts

Categories of Spending	<=300 Students	301-5,000 Students	5,001+ Students
Classroom Personnel and Materials			
Average Per-Pupil Spending	$3,004**	$2,574	$2,510
Coefficient of Variation	38%	16%	9%
Direct Services			
Average Per-Pupil Spending	$353**	$276	$261
Coefficient of Variation	142%	48%	32%
School Facilities			
Average Per-Pupil Spending	$733**	$486	$447
Coefficient of Variation	130%	42%	21%
School Administration			
Average Per-Pupil Spending	$265**	$187	$182
Coefficient of Variation	70%	26%	13%
Other School Expenditures			
Average Per-Pupil Spending	$455**	$299	$291
Coefficient of Variation	101%	47%	26%
District Operations			
Average Per-Pupil Spending	$549**	$384	$345
Coefficient of Variation	109%	34%	22%

NOTE: The differences in the means were tested between the smallest districts and each of the other size districts. * means the differences were statistically significant at the 5 percent level. ** means the differences were statistically significant at the 1 percent level.

Table 9.2

Variation in the Share of Dollars Different Size Districts Allocate to Expenditure Categories

Categories of Spending	<=300 Students	301-5,000 Students	5,001+ Students
Classroom Personnel and Materials			
Average Share of Total Spending	58.5%**	61.9%	62.4%
Coefficient of Variation	12%	7%	5%
Direct Services			
Average Share of Total Spending	6.0%*	6.5%	6.4%
Coefficient of Variation	58%	38%	26%
School Facilities			
Average Share of Total Spending	12.6%**	11.4%	11.1%
Coefficient of Variation	41%	23%	14%
School Administration			
Average Share of Total Spending	5.2%**	4.5%	4.5%
Coefficient of Variation	50%	20%	10%
Other School Expenditures			
Average Share of Total Spending	8.2%**	7.0%	7.2%
Coefficient of Variation	33%	30%	19%
District Operations			
Average Share of Total Spending	9.8%**	9.0%	8.5%
Coefficient of Variation	31%	20%	14%

NOTE: The differences in the means were tested between the smallest districts and each of the other size districts. * means the differences were statistically significant at the 5 percent level. ** means the differences were statistically significant at the 1 percent level.

The smallest districts show statistically significant differences in their patterns of spending than the larger school districts. A higher total per-pupil spending in the smallest school districts would be expected as per-pupil basic revenue limit dollars are set higher for "necessary" small districts. The smallest school districts, on average, spend more per-pupil on each category of spending than do the larger size school districts. At the same time, they spend different shares of their dollars on each category of expenditure. In particular, the smallest school districts spend a smaller share of their dollars on classroom personnel and materials and on direct services than do the larger school districts. The smallest school districts spend a larger share of their budgets on school facilities, school administration, other school expenditures, and district operations. While it is often argued that the largest size school districts devote a larger share of their dollars to district administration, that does not appear to be the case. It is in fact the smallest school districts, that possibly cannot realize some of the economies of scale, that devote a larger share of

their dollars to district operations.[56] This pattern also holds when looking at only the largest school districts, those enrolling over 50,000 students, which also devote about 9 percent of their resources to district operations.

The coefficient of variation provides a picture of how much variation there is in district spending around the averages to see if, in fact, the smallest school districts show more variation in spending than do the larger districts. For each category of spending, there is considerably more variation in spending patterns in the smallest districts than in the larger size districts. And, there is a decrease in this variation moving from the smallest districts to the medium size districts and then another decrease moving to the larger size districts. It is also interesting to note that regardless of the size of the district, districts show little variation in the share of dollars they devote to classroom personnel and materials. This limited discretion on the share of dollars spent on classroom personnel and materials arises from a variety of sources including the state education code that sets a minimum on the share of dollars that districts enrolling over 100 students must spend on salaries of classroom teachers, collective bargaining agreements, and restrictions on the use of categorical aid moneys.

These differences in the level and share of dollars that different size districts devote to each of the expenditure categories could also be due in part to different student and district characteristics present in districts of different sizes. For example, the smallest school districts in California tend to have smaller percentages of limited English proficient students. Table 9.3 presents the results from regression analyses that control for other district and student factors to see if the patterns in Tables 9.1 and 9.2 hold after controlling for these other factors. A "+" or a "-" in a cell indicates that district size is a statistically significant positive or negative predictor of the level or share of spending on the given spending category. A blank cell means that district size is not a statistically significant predictor of spending on the given category.

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[56]A recent study by NCES (February 1995) that looked across school districts in the U.S. also found that the nation's smallest districts spend the largest percentage of their dollars on administration.

Table 9.3

Statistical Significance of District Size as a Predictor of Spending in Each Category

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Per-Pupil Spending as District Size Increases	—	—	—	—	—	—
Share of Total Expenditures as District Size Increases	+		—		—	—

NOTE: Statistical significance is determined at the 5% level.

Controlling for other district and student characteristics many of the results seen in Tables 9.1 and 9.2 still hold although there are a couple of differences. Per-pupil spending is consistently lower on each category of spending as district size increases. In addition, the share of dollars devoted to classroom personnel and materials is higher as district size increases. A smaller percentage of dollars is allocated to school facilities, other school expenditures and district operations as district size increases. On the other hand, there is no statistically significant difference in the share of dollars devoted to direct services or school administration between small and large school districts once other factors are controlled for.

Smaller districts are spending more per-pupil on each category of spending while devoting a smaller share of their dollars to classroom personnel and materials and putting the extra dollars into school facilities, other school expenditures, and district operations. Larger districts, on the other hand, are trading off these expenditures for higher classroom personnel and materials expenditures. There are at least a few possible explanations for this. First, small districts are generally high spending districts and so can spend their "extra" dollars on boosting spending on other categories of expenditure. Further, small districts, due to diseconomies of scale, may need to devote relatively high per-pupil dollars on particular categories of spending such as district operations and school facilities. Large districts, on the other hand, may need to devote a relatively large share of their dollars to classroom personnel and materials and make tradeoffs with other expenditure categories. For example, large districts tend to receive a larger share of their dollars from categorical aid programs targeted at special needs students populations. These categorical aid dollars are

restricted in large part for use on classroom personnel and materials functions. In addition, to the extent that these programs are underfunded, money may be moved from other categories of expenditure to cover the additional expenses of providing services to special needs populations.

INFLUENCE OF DISTRICT LEVEL, WEALTH, AND METROPOLITAN STATUS ON DISTRICT SPENDING PATTERNS[57]

Elementary, high school and unified school districts likely show differences in the level and share of dollars they devote to different spending categories. Basic revenue limit aid sets per-pupil allocations the highest in high school districts followed by unified districts and then elementary districts. The question remains how districts allocate these higher discretionary dollars across functions to increase both per-pupil spending on particular functions and the share of dollars allocated to different functions. The share of dollars allocated to the classroom can be expected to be more similar across different levels of districts than the share of dollars allocated to other functions as all districts have a high minimum share of dollars allocated to the classroom as set by the California Education Code. At the same time, the California Education Code directs elementary districts to devote a larger minimum share of their dollars to the classroom relative to high school and unified school districts.

Metropolitan status is also likely to affect spending patterns for a variety of reasons. First, rural, urban and suburban areas face different geographic cost structures. For example, in different geographic locations it may cost different amounts to recruit and employ school personnel with similar characteristics into similar jobs and job assignments. Further, there are state programs that are particularly underfunded that affect some geographic areas more than others. One of these programs is transportation services. As rural and urban areas tend to rely heavily on transportation services, these districts generally have relatively large per-pupil expenditures on these services and spend a relatively large share of their dollars on transportation services. Again, the question remains on which other programs there is the flexibility to subsequently reduce expenditures.

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[57]The results presented in this section are for districts enrolling over 300 students. As explained in Section 4, studies of school district spending tend to exclude or separate the smallest size districts in analyses as these districts are often large outliers and can vary greatly in their per-pupil spending from year to year due to the gain or loss of a few students. The results for all districts are presented in Appendix F.

Finally, although the *Serrano* decisions combined with Proposition 13 have greatly limited local communities ability to raise additional revenues for K-12 education, there are still some opportunities to raise revenues locally--through bond issues, sale of property, and other local revenue sources. Research has found that communities with higher education levels and wealth not only had greater ability to pay for education but also higher willingness to pay. If this is the case, wealthier communities may still find opportunities to raise discretionary resources above what is available in other districts. Further, to the extent that they do raise alternative revenue sources, these local resources likely have greater flexibility in their use than state or federal revenue sources.

Tables 9.4 and 9.5 show the effect of district level, wealth, and metropolitan status on the level and share of district spending, holding other factors constant.

Table 9.4

Statistical Significance of District Level, Wealth, and Metropolitan Status as Predictors of Per-Pupil Spending in Each Category[58]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Unified versus Elementary District	+	+	+	+	+	+
High School versus Elementary District	+	+	+	+	+	+
Community Wealth	+	—		+	+	+
Rural versus Large Urban District						
Suburban versus Large Urban Districts	—		—	—	—	
Mid-Size Central City versus Large Urban District	—		—	—	—	

NOTE: Statistical significance is determined at the 5% level.

[58]These results are for districts enrolling over 300 students as explained in Section 4. As shown in Appendix F, when all districts are included there are differences in the effect of district wealth on classroom personnel and materials and direct services and the effect of mid-size central districts on school facilities.

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Table 9.5

Statistical Significance of District Level, Wealth, and Metropolitan Status as Predictors of the Share of Spending in Each Category[59]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Unified versus Elementary District	—	+	+		+	+
High School versus Elementary District	—	+	+	—	+	+
Community Wealth	—	—	—	+	+	+
Rural versus Large Urban District						
Suburban versus Large Urban Districts	+				—	
Mid-Size Central City versus Large Urban District	+				—	

NOTE: Statistical significance is determined at the 5% level.

Unified and high school districts are using their higher total per-pupil revenues to boost per-pupil spending on each category of expenditure relative to elementary districts. High school and unified school districts spend more than elementary school districts not only on classroom personnel and materials but also on such functions as school facilities and district operations. For example, controlling for other factors, high school districts spend about $392 more per pupil than elementary districts on classroom personnel and materials and $307 more per pupil on school facilities. The differences in total per-pupil spending between elementary districts and high school and unified districts are to some extent explained by the higher basic revenue limit aid that they receive. But, the differences in total per-pupil general-fund spending between different levels of districts, controlling for other factors, are larger than those that can be explained by the revenue limits alone.

[59]These results are for districts enrolling over 300 students as explained in Section 4. As shown in Appendix F, when all districts are included, there are differences in the effect of suburban and mid-size central districts on school administration.

While high school and unified districts spend more per pupil on each category of spending than elementary districts, they use those higher resources to boost their share of spending on other categories of spending than classroom personnel and materials. In particular, they show a higher share of spending on direct services, school facilities, other school expenditures, and direct services than do elementary districts. The differences between the share of dollars elementary districts versus high school and unified districts devote to classroom personnel and materials is close to the differences in the minimums they must devote to classroom teachers' salaries as set in the California Education Code. As noted earlier, elementary, high school, and unified districts must allocate 60 percent, 50 percent, and 55 percent, respectively, of the district's "current expense of education" for salaries of classroom teachers. This suggests that high schools and unified districts are abiding by these minimums and supplementing expenditures elsewhere. Elementary districts, on the other hand, with lower per-pupil basic revenue limits and higher shares to be spent on the classroom are trading other expenditures for expenditures on the classroom. These results differ from the results in a recent study (NCES, February 1995) which found that looking across the United States high school districts spend a larger share of their dollars on instruction than do elementary districts. This difference found in California relative to the U.S. is likely due in part to California's requirements that set minimum shares lower in high school districts than in elementary districts.

The wealth of the community also has interesting implications for district spending decisions. It does appear that controlling for other factors, the wealth of the community affects the level of district spending. This suggests that wealthier districts take advantage of some opportunities to raise moneys locally. Further, to the extent that they can raise funds from alternative revenue sources, these funds may have greater flexibility in their use than state or federal revenue sources. Higher wealth communities have higher per-pupil expenditures on classroom personnel and materials, direct services, school administration, other school, and district operations. It is interesting to note that there is no significant difference in per-pupil general-fund spending on school facilities.[60] Further, in looking at the share of dollars that these districts devote to different categories, their share of dollars tend to be higher on school and

[60]These are general-fund expenditures only. There are separate building funds that are not considered here.

district administration and operations functions and lower on classroom personnel and materials, direct services, and school facilities. Higher wealth communities are relatively high per-pupil spending districts and so can spend equal or more than other districts per pupil on a variety of categories while at the same time spending a smaller share of their dollars on some categories. These districts use their flexibility to boost their share of spending on school and district operations and administration.

There are no significant differences in per-pupil spending on any of the expenditure categories between rural and large urban districts, controlling for other factors. There are a couple of possible explanations for this result. One argument that has been made is that rural districts tend to face relatively low input costs but relatively high service costs and the opposite is true in the case of urban districts. In the net, these two types of costs may work to offset each other in rural and urban areas.[61] Further, some argue that both very small and very large districts face diseconomies of scale. Because rural districts tend to be small and urban districts tend to be large, it may cost both types of districts more to achieve the same output than it does other districts.[62]

In fact, large urban districts do spend more per-pupil on classroom personnel and materials, school facilities, school administration, and other school expenditures than do suburban or mid-size central districts. The majority of spending in each of these categories goes to salaries which are estimated in a number of studies[63] to be affected by geographic cost factors. Differences in per-pupil spending are reduced once one controls for geographic costs but statistically significant differences still remain.[64] In addition, the share of dollars that districts in different metropolitan areas devote to particular spending categories differs. Suburban and mid-size central districts devote a larger share of their dollars to classroom personnel and materials and a smaller share of their dollars to the category of other school expenditures relative to large urban districts. Other school functions such as school office personnel seem to play a larger role in large urban school districts which devote a relatively large level and share of dollars on the "other school" category of spending.

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[61]See discussion of this in Monk (1990).

[62]See discussion of this literature in Monk (1990).

[63]See, for example, Barro (1992), McMahon and Chang (1991) and NCES (October 1995).

[64]See Appendix G.

10. THE EFFECT OF STUDENT CHARACTERISTICS ON DISTRICT SPENDING PATTERNS

The Federal government and state governments have long recognized that additional resources are required by districts to provide adequate services for special needs populations and have established categorical aid programs to compensate districts for costs associated with these services. In addition to special needs students placing particular demands on districts, the categorical aid programs vary in the degree of restrictions they place on the use of education dollars and can affect district spending decisions in a variety of ways. First, these programs generally restrict the type of student to receive the funds and often the nature of the services to be provided. Further, to the extent that these sources of funds do not cover the full cost of providing services to these special population, general-fund revenues may have to cover the shortfall. In addition, these programs often entail administrative expenses as they involve complicated funding formulas, rules and regulations to implement the programs, recordkeeping and the filing of reports. This section will examine the effect of specific student characteristics on district spending decisions including the effect of special education students, minority students, limited English proficient students, and students living in poverty.

INFLUENCE OF SPECIAL EDUCATION STUDENTS ON DISTRICT SPENDING PATTERNS

Special Education has received much attention recently due to both the underfunding of the program and the complex funding mechanism for providing aid. The California Legislature in 1994 requested the California Department of Education, the Department of Finance, and the Legislative Analyst's Office to jointly review the Master Plan for Special Education and propose a new funding model.[65] Special education is unique among all categorical programs in California as the mandate to provide special education services must be met, regardless of whether the resulting expenditures exceed the revenues received. Special education programs have never been fully funded which means that California school districts have experienced ongoing "encroachment" into general education funds to maintain special education services.

The special education program, by far the largest of the state categorical aid programs, provides a variety of restrictions on district expenditures. First, the special education funding formula is based on

[65]The final report was issued in November 1995.

providing services under one of three program models, each with a certain array of associated staff and, in some cases, a prescribed number of pupils per staff member. In addition, the underfunding of the program suggests that resources must be pulled away from other uses in order to met the mandate to provide services. Further, the program involves many administrative functions. The funding of special education relies on a number of complicated and confusing formulas. In addition, a multidisciplinary team must identify and screen students potentially needing special education services, formally assess specific areas of educational need, develop an individualized program for how those needs will be met, and monitor the student's progress.

Table 10.1 examines the relationship between the percentage of special education students and district spending patterns. The results are presented both for per-pupil spending and the share of spending across spending categories.[66]

Table 10.1

Statistical Significance of the Percentage of Special Education Students as a Predictor of Spending in Each Category[67]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Per-Pupil Spending as the Percentage of Special Education Students Increases	+	+		+	+	+
Share of Total Expenditures as the Percentage of Special Education Students Increases		+	—			+

NOTE: Statistical significance is determined at the 5% level.

Per-pupil general-fund spending on classroom personnel and materials, direct services, school administration, other school

[66]This analysis uses a single variable to examine the effect of special education students on district spending patterns. In practice, there is a great deal of diversity among special education students (for example, special education funding distinguishes students based on the level of services deemed necessary) and districts serve these students in different ways. The measure used in this analysis does not distinguish the level of services needed by special education students or how different districts respond to those needs. These results are intended to show only broad patterns across districts with different special education populations.

[67]These results are for districts enrolling over 300 students as explained in Section 4. The detailed results for districts enrolling over 300 students as well as for all districts are presented in Appendix F.

services, and district operations all increase as the percentage of special education students increases. Only for general-fund school facilities expenditures does the percentage of special education students have no significant effect on per-pupil spending. In particular, per-pupil classroom personnel and materials spending increases by about $21 for each percentage point increase in special education students. While per-pupil spending on most categories is higher for those districts with larger percentages of special education students, the differences may not be great enough to account for the actual additional costs of serving those students. A recent study (NCES, February 1995) found that across districts in the United States per-pupil spending was higher in districts serving larger percentages of special education students but not high enough to offset the additional costs of special education programs. The NCES study used a multiplier for special education students of 2.3 based on studies[68] that have found that the average cost of serving a special education student is about 2.3 times the cost of serving a regular education student. Applying this same multiplier to weight special education students in this study, the sign and statistical significance of the results are the same as in Table 10.1 although the size of the differences are considerably smaller. For example, per-pupil classroom personnel and materials spending increases by about $9 for each percentage point increase in special education students instead of $21 in the unweighted model. These results are different from those found in the NCES study in which after adjusting for student costs, instructional spending was significantly lower in districts as the percentage of special education students increased. This difference in findings could be the result of the cost factor having risen over time or being higher than 2.3 in California's school districts. Sensitivity analyses using different cost factors suggest that the cost factor in California would have to be around 3.5 to obtain results similar to those reported in the NCES study.

The patterns of spending in Table 10.1 suggest how special education funding affects district spending decisions and possible constraints to those decisions. Controlling for other factors, districts are using their special education dollars to increase per-pupil spending on a variety of categories other than classroom personnel and materials. This is to be expected given the demands the program places on administrative and other functions. For example, direct services expenditures include mental health professionals that may be

[68]See Moore et. al. (1988) and Chaikind, Danielson, and Brauen (1993).

part of the multidisciplinary team assessing students' needs for special education services. In addition, special education administrators in district offices monitor the program and complete the multitude of forms, including funding forms, associated with the program. The percentage of special education students does not have a statistically significant effect on per-pupil general-fund spending on school facilities.

Districts with larger percentages of special education students do spend a smaller share of their dollars on school facilities. As the percentage of special education students increases, districts are using additional dollars to boost their share of spending on direct services and district operations and spending a smaller share of their dollars on school facilities. In addition, districts with larger special education populations do not devote a higher share of their dollars to classroom personnel and materials. As most special education dollars go to support additional teachers' salaries, one might expect districts with higher percentages of special education students to spend larger shares of their dollars on classroom personnel and materials. There are at least a few possible explanations for why this may not be the case. First, the share of spending on the classroom may be dependent on the number of special education students, not the percentage of special education students. This does not appear to be the case as the number of special education students is also not a statistically significant predictor of the share of spending in the classroom. Or, there may be a nonlinear relationship between the share of spending in the classroom and the percentage of special education students. The percentage of special education students may influence the share of spending in the classroom but only above a certain base percentage of special education students. Further, the Education Code specifies high minimum shares of spending on teachers salaries and as was seen in Chapter 8 there is little variation around these minimums. Districts with high percentages of special education students also likely use these minimums as approximate maximums.

INFLUENCE OF LIMITED ENGLISH PROFICIENT STUDENTS, MINORITY STUDENTS, AND STUDENT POVERTY ON DISTRICT SPENDING PATTERNS

Tables 10.2 and 10.3 show the effect of limited English proficient students, minority students, and student poverty on district spending decisions. Table 10.2 shows the effect of these student characteristics on per-pupil spending while Table 10.3 shows the effect of these characteristics on the allocation of resources across spending categories.

Table 10.2

Statistical Significance of LEP Students, Minority Students, and Student Poverty as Predictors of Per-Pupil Spending in Each Category[69]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Percentage of LEP Students		—		—		—
Percentage of Minority Students					+	+
Percentage of Students in Poverty	+	+		+	+	+

NOTE: Statistical significance here is determined at the 5% level.

Table 10.3

Statistical Significance of LEP Students, Minority Students, and Student Poverty as Predictors of the Share of Spending in Each Category[70]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Percentage of LEP Students	+	—				
Percentage of Minority Students	—				+	+
Percentage of Students in Poverty		+				+

NOTE: Statistical significance here is determined at the 5% level.

Districts with high percentages of limited English proficient students spend either less or the same per pupil on each category of expenditure. Bilingual Education categorical aid goes to districts with limited English proficient students but it is not large enough to significantly boost per-pupil spending in districts that receive these moneys relative to other districts. Looking at Tables 10.2 and 10.3 suggests the types of tradeoffs districts with large percentages of limited English proficient student are making. While districts with large LEP student bodies are relatively low per-pupil spending

[69]These results are for districts with enrollments over 300 only. The detailed results for districts enrolling over 300 students as well as for all districts are presented in Appendix F.

[70]These results are for districts with enrollments over 300 only. The detailed results for districts enrolling over 300 students as well as for all districts are presented in Appendix F.

districts, they use their discretionary resources to boost spending on classroom personnel and materials. These districts spend a relatively large share of their dollars on classroom personnel and materials which results in there being no statistically significant difference in per-pupil spending on classroom personnel and materials between them and other districts. At the same time, they reduce per-pupil spending on a variety of other categories. There are at least a couple of explanations for this. First, the categorical aid dollars are largely restricted in their use to supplemental instructional programs for LEP students. Second, consistent with findings in previous research, districts with less to spend tend to allocate a relatively large proportion of their dollars to classroom expenditures while districts with more to spend allocate a relatively large proportion of their dollars to support services.[71] All districts face a high minimum per-pupil expenditure on the classroom due to rules, regulations, and contracts guiding classroom spending as well as preferences for classroom spending. Districts with less to spend in total need to allocate a relatively large share of their budgets to classroom spending to reach these minimum per-pupil expenditures.

More money is spent per-pupil in total in districts with the highest percentages of minority students compared to districts with the lowest percentages of minority students. Controlling for other factors, for every percentage point increase in minority enrollment, total per-pupil spending increases by about $2.54. These higher per-pupil expenditures go to other school expenditures and district operations. In addition, districts with higher percentages of minority students spend a larger share of their dollars on other school expenditures and district operations. School and district offices may take on additional functions in high minority districts. It is surprising that the percentage of minority students is not a statistically significant predictor of spending on direct services which includes transportation services. Desegregation aid goes to reimburse districts for a variety of costs associated with desegregation programs with home-to-school transportation services generally comprising a large share of the costs. One reason why the percentage of minority students is not a significant predictor of direct services spending could be the funding mechanism for state desegregation aid. A recent study found wide disparities in per-pupil desegregation aid for districts with similar demographics due to the unequal reimbursement mechanism for aid, the failure of the aid

[71]See, for example, Hartman (Summer 1994).

formula to keep up with changing demographics and disjointed legislative and court activity (Timar, Summer 1994).

There are a variety of state and federal programs in which the determination of aid is tied to student poverty levels. This includes federal Title 1 aid programs, federal and state Child Nutrition programs, and state Economic Impact Aid. Tables 10.2 and 10.3 show that districts with higher percentages of students in poverty spend more per pupil on a variety of categories of expenditures. As the percentage of children in poverty increases, per-pupil spending is higher on each category except for school facilities. The higher per-pupil spending on a variety of categories is due in part to the flexibility some of the programs allow in the allocation of dollars. For example, Economic Impact Aid has few restrictions on its use and Federal Title 1 aid, which has traditionally been fairly restrictive, has recently moved toward allowing greater flexibility in its use. In addition, similar to the results for special education, districts with a high percentage of children in poverty spend more per-pupil on district operations; they also spend a larger share of their dollars on district operations. These districts receive a larger share of their dollars from categorical aid programs which involve administrative support.

While it is not known whether per-pupil spending in districts with high percentages of children in poverty is great enough to compensate for the additional needs of students in those districts, this study finds that districts in California spend about $11 more per-pupil in total for each percentage point increase in children in poverty. This result is different from the result found in another recent study that looked across all districts in the United States. A recent study by NCES found that high poverty districts have less to spend per pupil in total and spend less per pupil on core instruction and on current operations (National Center for Education Statistics, February 1995). The difference in results is likely due in part to the combination of the *Serrano* decisions and Proposition 13 in California which have greatly limited the ability of wealthier communities to raise additional dollars locally.

11. CONCLUSIONS

The movement today in education governance reform efforts is toward more local control of education decisionmaking. A key element of local decisionmaking is local control of budgetary decisionmaking. Restrictions on local budgetary decisionmaking in California come from a variety of sources examined in this research including federal and state categorical aid programs, the California Education Code, the inability to raise discretionary resources locally, the underfunding of particular programs, collective bargaining agreements, and federal and state mandates. The variety of mechanisms by which school districts receive revenues and the constraints to local spending decisions leave open questions as to how districts allocate education dollars, how this differs by districts with different characteristics, what tradeoffs districts make in their allocation decisions, and ultimately what degree of flexibility they have to make resource allocation decisions. These questions were addressed through this research. People in the schools, district offices, and county offices of education suggest that a lack of budgetary flexibility is a major obstacle to local decisionmaking. If this is the case, changing the level of budgetary authority without addressing the constraints to spending those resources may result in little change under decentralization.

This research suggests on what kinds of expenditures and in what types of districts there is more or less flexibility to make resource allocation decisions. The results point to possible tensions between local control and the current structure and policies for financing K-12 education in California.

Some findings of this study are as follows:

1. Districts show little variation in the level or share of dollars they allocate to classroom personnel and materials, by far the largest category of spending. This is not surprising given that the California Education Code, categorical aid programs, and collective bargaining agreements all place restrictions on decisions guiding classroom personnel and materials expenditures. To the extent that there is variation, it is explained in large part by different minimum shares of expenditures to be allocated to this function by different level districts (elementary, high school, unified) as set in the California Education Code as well as by the total level of spending in districts--districts with more to spend, controlling for district and student characteristics, spend equal or more per-pupil on classroom

personnel and materials while allocating a relatively small share of their dollars to this category and boosting expenditures elsewhere.

2. Districts show more variability in their decisions regarding spending on such categories of expenditure as direct student services and school facilities. There appears to be more flexibility for districts to increase or decrease the share or level of expenditures on categories other than classroom personnel and materials. How they use this flexibility is influenced by their total level of resources as well as district and student characteristics.

3. The smallest school districts in California provide some insights into how decisions would be made at more local levels of control under current rules and regulations governing education. These districts show statistically significant different patterns of spending than the larger size school districts but also show limited flexibility on some categories of expenditure. The smallest school districts spend significantly more per-pupil on each category of expenditure due in part to higher basic revenue limits. At the same time, they spend different shares of their dollars on each category of expenditure relative to larger school districts. The smallest school districts spend a significantly smaller share of their dollars on classroom personnel and materials and on direct services and a significantly larger share of their budgets on school facilities, school administration, other school expenditures, and district operations. These larger allocations to administrative functions are do in part to almost all districts, regardless of their size, filling particular administrative functions such as a business official to manage the financial resources and transportation and food services managers to comply with the rules and regulations governing the provision of these services. The smallest districts do show considerably more variation in their spending patterns than their larger counterparts. But, even the smallest districts show little variation in their allocations to classroom personnel and materials.

4. There are no statistically significant differences in the level or share of spending on any of the expenditure categories between rural and large urban districts, controlling for other factors. There are a couple of possible explanations for this result. One argument that has been made is that rural districts tend to face relatively low input costs but relatively high service costs and the opposite is true in the case of urban districts. In the net, these two types of costs may work to offset each other in rural and urban areas. Further, some argue that both very small and very large districts face diseconomies of scale. Because rural districts tend to be small and urban districts tend to be

large, it may cost both types of districts more to achieve the same output than it does other districts.

5. While Proposition 13 has severely constrained the ability of local districts to raise discretionary resources locally, wealthier communities do appear to take advantage of some opportunities to raise alternative, flexible resources. They use these additional resources to boost spending on classroom personnel and materials, school administration, other school expenditures, and district operations.

6. At the same time, districts with relatively large percentages of children in poverty spend more per-pupil in total and on several categories of spending due to a number of categorical aid programs that are tied to poverty numbers. While it is not known whether per-pupil spending in districts with large percentages of children in poverty is high enough to compensate for the additional needs of students in those districts, this result is different from the results found in another recent study (NCES, February 1995) that looked across all districts in the United States. That study found that high poverty districts have less to spend per pupil in total and spend less per pupil on core instruction and on current operations. The difference in results is likely due in part to the combination of the *Serrano* decisions and Proposition 13 in California which have greatly limited the ability of districts to raise additional dollars locally. Categorical aid is an important source of additional resources to districts with intense competition over the division of total state dollars between basic aid and categorical aid and among categorical aid programs.

7. Districts with large limited English proficient populations likely face little flexibility in making spending decisions given their low level of resources. Consistent with the findings in previous research on low-spending districts, districts with relatively large percentages of limited English proficient students spend less per-pupil on a variety of categories in order to boost their share of spending on classroom personnel and material.

8. The patterns of spending in school districts as the percentage of special education students increases suggest what types of tradeoffs districts are making given the underfunding and requirements of the program. Districts with larger percentages of special education students spend more per-pupil on all categories of spending except for school facilities. This is to be expected given the demands the program places on administrative and other functions. As the percentage of special education students increases, districts spend a smaller share of their dollars on school facilities while increasing expenditures on other functions such as direct services and district administration.

9. Districts with large special needs populations and, therefore, a relatively large share of their dollars received from categorical aid programs, spend a significantly larger share of their dollars on district operations. These programs often involve complying with a variety of rules and regulations associated with them as well as filing a multitude of forms and computing complicated funding formulas.

The research approach developed in this study seeks to understand the concept of local control and flexibility of budgetary resources through assessing the restrictions placed on the ability of school districts to make decisions over the allocation of their resources and current district allocative behavior. There are several limitations with this approach. One limitation is that it is difficult to know the extent to which schools have flexibility in making decisions where districts do not. Most education dollars now flow to school districts with district offices paying for many of the services of schools directly and relatively small amounts of money being distributed down to schools. Even if the same restrictions face schools as currently face districts, it may be that different governance structures in schools allow for more flexibility to work within current constraints. Another limitation is that district flexibility may be greater than the allocation patterns would suggest. For example, even if all districts allocate similar dollars to classroom teachers, some districts may have greater flexibility in hiring teachers, promoting teachers, classroom instruction, etc. While determining how districts allocate their resources provides insight into how much flexibility they have to make spending decisions, it does not show how much flexibility they have in the actual processes which those resources support. Another limitation is that looking at the allocation of resources does not provide insight into who is actually making the allocation decisions--school boards, superintendents, district or school administrators, teachers, etc. And, it does not determine which particular restrictions are actually enforced and/or binding and which are not.

AREAS FOR FUTURE RESEARCH

Questions of local control and flexibility over resource allocation decisions pose complicated issues that this research cannot fully resolve. The results from this research provide some interesting initial insights and point to some areas for future research. These areas include:

1. *Examining resource allocation decisions at the school level.* Restrictions placed on overall district spending do not necessarily preclude variation in spending patterns among schools within districts.

There is no central source in California that collects school level budget information so this area of research would involve collecting and analyzing a sample of individual school budgets to examine variation in spending patterns across schools within districts. In addition, as most resources now flow to school districts with district offices paying for many of the services of schools directly, a related area of research would look at the extent to which allocation decisions at the school level are controlled at the district level. An important addition to measuring flexibility would be to gain an understanding of the organizational structure, environment, and policies by which districts and schools are managed as these are likely important factors in shaping actual allocation decisions. Included in this would be an assessment of how allocation decisions are made and by whom they are made in a sample of districts and schools.

2. *Evaluating options to raise additional resources locally.* There is a growing interest in allowing districts and schools greater flexibility to raise resources locally.[72] This has become a particularly important issue given both current reform efforts that look to more local control of education decisionmaking and the fiscal constraints that have been facing California and their effect on education funding. Additional research needs to be done on options for allowing more local control over raising education funding. This includes revisiting current constraints to generating resources locally and measuring some of the effects of loosening those constraints. These options would need to be evaluated within the *Serrano* tax equity requirements. In addition, there is evidence that wealthier communities are finding limited alternative local sources of revenues to boost education spending. Research should be done to examine the source of these alternative sources of revenues, the size of these revenues, and the ability of diverse schools and school districts to obtain revenues through such efforts.[73] Further, there are also likely off-budget sources of revenues that are not accounted for in standard accounting forms but which may provide important sources of discretionary resources to some districts.

3. *Exploring the role of district offices of education under decentralized decisionmaking.* Currently in California, district offices of education pay for many of the services of the schools directly, with

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[72]For example, a report called "Rising to the Challenge," was recently released by the nonpartisan Education Commission of the States and recommends overhauling the state's school financing system to give local districts greater control over raising and spending revenues.

[73]District financial reporting forms show that local miscellaneous funds vary from less than 1 percent for some districts to over 20 percent for other districts.

relatively small amounts of money distributed down to the schools. Several of the education governance reform efforts, including site-based management and charter school movements, seek to move decisionmaking authority, including budgetary authority, to the school site. Negotiations between school districts and schools as to what should be a district function and what should be a school function are not straightforward. First, there is often not good recordkeeping that allows districts and schools to see exactly what is being spent on each function for each school. The first area of research would provide a basic understanding of what it costs the district to provide services to schools, and therefore what it would cost schools to take over or to keep particular services with district offices. Further, once it is determined how much a district is spending on a given school on particular programs or functions, the question remains what should remain a district function and what functions should be given to the schools. For example, due to the underfunding of the special education program, research needs to look at what it would mean for districts to allocate dollars to schools based only on their own students and move away from districts sharing the additional costs of the program across schools. In addition, research needs to examine which types of expenditures--workers' compensation benefits, maintenance services, transportation services, etc.--economy of scale arguments suggest should remain a central office function. Looking at spending patterns in the smallest school districts in California suggests certain types of expenditures that are more costly when performed on a small scale.

4. *Examining ways to simplify categorical aid funding and allow greater flexibility in its use.* School districts in California that receive a relatively large share of their dollars from categorical aid sources spend a relatively large level and share of their dollars on administrative functions. This supports the general view that categorical aid funding has become unnecessarily complicated over time with a multitude of programs each with different and involved funding formulas, implementation requirements, and monitoring and reporting functions. With the movement at the federal level to increase coordination of categorical aid programs and reduce monitoring functions while relying more heavily on outcomes, a broad framework is in place for California to simplify categorical aid funding and providing greater flexibility in its use. Bringing those changes in at the state level is not a straightforward exercise given the complex fiscal and policy environment in which categorical aid funding operates.

Appendix A

DATA RELIABILITY AND OTHER DATA ISSUES

As with any data that are collected, issues of data reliability and quality need to be addressed. First I will discuss issues of data reliability and quality with respect to the fiscal data before moving to the district and student characteristics data. Then, I will discuss how I addressed the issue of missing data.

FISCAL DATA

The California Department of Education each year submits the J200 forms on software to school districts. The software has some internal checks of its own including checking that data are entered where they are supposed to be, checking that columns of numbers add up and are consistent with other columns of numbers, and checking that numbers are positive or negative where expected. Typically, school districts complete these forms and pass them on to the counties, which review them. Assuming that everything is complete and validated, the county passes them on to the state. Once received by the California Department of Education, the data from all of the districts are compiled into one data set. The state does not audit the individual district forms and no data cleanup occurs once the forms reach the California Department of Education. Since the school districts are required by law to complete these forms, the California Department of Education receives completed forms back from all school districts.

I used the J200 data for the 1992-93 school year (available on data tape) and the 1993-94 school year (available on floppy discs). There were no missing data for either year. I did confirm that the individual objects of expenditure for each district added up to object subtotals and to the total expenditures as reported by the districts. Since the expenditures in these forms are self-reported, there are important issues related to misreporting. Many school districts have limited administrative resources, which may result in sloppy accounting procedures. Even with state guidelines for reporting finance data as detailed in the *California School Accounting Manual*, there may be limited time or attention devoted to their completion. Possibly of more concern is the issue of systematic misreporting. There is a frequently expressed concern that certain types of spending, mainly on administration, are not accurately recorded because there are pressures

on school districts to report more spending on the classroom and less on administration.

We do not know the extent to which these issues influence reporting in the J200 forms. Some checks on the data are conducted in part to address these concerns, but whether the checks are adequate is unknown. Each year, each district's reports are given a full audit by a certified accounting firm. The audit is then submitted for review to the relevant county office of education, the state controller's office, and the California Department of Education. The state controller's office each year randomly selects a subset of districts to validate the audit findings. In addition, I used the detailed budgets that I acquired to check what spending the districts were including in each of the objects of expenditure and whether they conformed with the definitions given by the *California School Accounting Manual*. For this small sample of school districts, no apparent misreporting of data was taking place. Whether this small sample is representative of the other districts in California is unknown.

Both the 1991 and 1992 Matrix data were sent from the California Department of Education on floppy discs. The California Department of Education sends the matrix spreadsheet on computer disc to all school districts with an average daily attendance of 5,000 or above. Response is voluntary, although a large fraction do respond, about 92 percent in each year. The California Department of Education checks the returned data to see that the matrix data match the object totals in the J200 forms. If object totals do not match for a district, the California Department of Education works with the district to make the necessary corrections. The matrix data that I received had been cleaned and there were no missing data. Since the expenditures in the matrix data are also self-reported, there are again issues related to misreporting as suggested in discussions of the J200 data. However, the matrix data serve to some extent as a check on the J200 data by providing additional detail on what is included in particular objects of expenditures in the J200 forms.

Another issue with respect to the Matrix data is that it lags behind the J200 data by a year. Particular objects of expenditures in the J200 data set were broken down into more detailed expenditures based on percentages determined in the matrix data. For example, if the data matrix showed that about 7 percent of total benefits went to school administrators, then this percentage was applied to the total Employee Benefits object of expenditure in the J200 set. Because of this lag in the data, I applied percentages from the matrix data to expenditure data covering the following year. These percentages are stable from year to

year in the matrix data that I examined. Finally, the matrix data are a survey of a select number of districts in California. The percentages that I have derived, therefore, may not be representative of the other districts in the state. The percentages were fairly consistent across those districts included in the survey, possibly allowing greater confidence in the ability to generalize from the sample.

District and Student Characteristics Data

Unlike the fiscal data, some of the data on the student and district characteristics is missing for some school districts. Table A.1 shows for each variable the number of districts for which information is available, the number of districts for which data are missing, and the percentage of districts for which the data are missing. Some of the data are missing due to new districts being created since the data were collected. This is the case with the census data which was collected in 1990. The regression estimates presented in Appendix F were calculated with this data missing--no data were imputed for these analyses. The next subsection explores the effect of the missing data on the coefficients.

Table A.1

Number of Districts Included for Each Independent Variable

Independent Variables	Number of Districts Included	Number of Missing Districts	Percentage of Districts that are Missing
District Size	1,998	0	0.0
Unified Districts	608	0	0.0
High School Districts	206	0	0.0
Elementary Districts	1,184	0	0.0
Percentage of Limited English Proficient Students	1,978	20	1.0
Percentage Minority Enrollment	1,998	0	0.0
Percentage Children in Poverty	1,938	60	3.0
Percentage Special Education Students	1,992	6	0.3
Median Housing Value	1,883	115	5.8
Metropolitan Status Variables	1,995	3	0.1
Teachers' Average Years Experience Teaching	1,998	0	0.0
Percentage Teachers with Master's Degrees	1,998	0	0.0

NOTE: This includes district data for both the 1992 and 1993 school years. The number of districts for both the 1992 and 1993 school years is 1,998. In 1992 there were 1,001 district and in 1993 there were 997 districts.

Another issue with the district and student characteristics data is that some of the data lags behind the fiscal data. This is the case for the 1990 census data on district socioeconomic factors. And, the latest year for which the Common Core of Data on special education students is available is for the 1992 school year. This means that in some cases I am regressing older data on more current fiscal data. One would not expect relative district poverty measures and housing value measures to change much from one year to another. But, to the extent that they do, this could change the regression results.

ADDRESSING MISSING DATA

As outlined in Table A.1, some of the district and student characteristic factors are not reported for some of the districts. In particular, this is the case for the percentage of limited English proficient students, the percentage of children in poverty, the percentage of special education students, the median housing values, and metropolitan status. The percentage of missing data ranges from 5.8 percent for median housing value to .1 percent for the metropolitan status variables. The regression results presented in the tables in Appendix F shows that this missing data results in 1,852 districts out of 1,998 districts, or 93 percent of total districts, being included in the regression estimates.

To examine the effect of the missing data on the regression results, I used a common strategy that allows one to see the effect of the missing data on the coefficients of the variables which have a lot of missing data. The procedure involves creating dummy variables for the variables that have missing observations and recoding the missing observations to be zero instead of missing. This allows the use of the whole sample and in estimation effectively wipes out the missing observations when the dummy variable is included in the regression equation. The regression equation includes both the independent variables with the missing data and the related dummy variables. In this way, all of the data for the missing observation is not thrown away. The results from using this technique show that there is little change in the coefficients when the larger sample is used. And, in no case is the statistical significance of a variable changed.

For example, we can look at the size of the coefficients in the regression of the district and student characteristics on total per-pupil general fund spending when dummy variables are created for variables that have missing observations. These results can be compared with the results in Table F.1 in which no adjustments have been made for missing data.

Table A.2

Total Per-Pupil General-Fund Expenditures Adjusted for Student and District Characteristics, With Dummy Variables for Missing Data

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.09**	-.05**
Unified District	983.24**	594.65**
High School District	1274.73**	881.11**
Percentage of Limited English Proficient Students	-8.27*	-2.77
Percentage Minority Enrollment	7.84**	2.35**
Percentage Children in Poverty	-.90	10.67**
Percentage Special Education Students	10.07	29.97**
Median Housing Value	.41	1.58**
Rural District	-187.80	-100.40
Suburban District	-675.94**	-311.24**
Mid-Size Central City	-557.58*	-242.16**
Intercept	6233.97	4267.47
Adjusted R-square	.23	.40
Observations	1998	1543

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Comparing the results in Table A.2 with those in Table F.1 shows that there are very small changes in the size of the coefficients when dummy variables are included in the sample so that data are not lost. And, none of the statistical significance of any of the variables changed between Table F.1 and Table A.2. The absolute size of some of the coefficients on the metropolitan status variables that were not statistically significant predictors did change between Tables F.1 and A.2, but these variables are not statistically significant predictors of total per-pupil general fund expenditures. In cases where the metropolitan status variables are statistically significant predictors of per-pupil general fund expenditures, the size of the coefficients changed very little.

Similar results are found when comparisons are made with the coefficients presented in Tables F.2 through F.7 which show the effect of the independent variables on per-pupil spending on a variety of spending categories not adjusting for missing data. Again, there is little change in the coefficients when the larger sample is used and in no case is the statistical significance of any of the variables changed.

Appendix B

EXPENDITURES INCLUDED IN EACH CATEGORY

There are many types of district general-fund expenditures included in each expenditure category. The expenditures to be included in each category were determined through research done in a previous report (Krop, et. al., 1995) that looked at what others had done in California and in other states as well as relied on extensive discussions held with school administrators, district administrators, and education researchers.

Table B.1 provides the detail on what types of expenditures are included in each expenditure category, the size of each type of expenditure, and the average district per-pupil expenditure on each type of expenditure.[74] It should be noted that not all 997 school districts in California spend money on each type of expenditure reported in Table B.1. The average per-pupil expenditures shown in Table B.1 are across all school districts and would be higher if one only looked at per-pupil spending within districts that actually made the particular type of expenditure. Within each expenditure category, expenditures on personnel salaries and benefits are reported first, followed by the other types of expenditures included in the category.

[74]For information on how each of these expenditures was calculated see Appendix B of Krop, et. al. (1995).

Table B.1

Expenditures Included in Each Category, 1993-94

Type of Expenditure	Total District General-Fund Expenditure (millions)	Average Per-Pupil Expenditure
Classroom Personnel and Materials:		
Teachers' Salaries	9,501	1,815
Instructional Aides' Salaries	710	185
Benefits-Teachers	2,281	457
Benefits-Aides	196	39
Retiree Benefits	249	50
Textbooks	146	29
Instructional Materials and Supplies	354	89
Books Other Than Textbooks	45	10
Instructional Equipment	49	11
Direct Services:		
Librarians' Salaries	53	6
Guidance, Welfare, and Attendance Salaries	418	47
Physical and Mental Health Salaries	87	8
Food Services Salaries	4	8
Pupil Transportation Salaries	270	82
Other Classified Salaries	277	47
Benefits Excluding Transportation and Food Services	151	30
Pupil Transportation Benefits	89	18
Food Services Benefits	1	.2
Pupil Transportation Supplies	60	25
Food Services Supplies	2	2
Books and Media for New and Expanded Libraries	2	1
Equipment	49	11
Other Supplies	29	7
School Facilities:		
Maintenance Salaries	234	43
Operations Salaries	702	130
Benefits for Maintenance and Operations	330	66
Utilities and Housekeeping Services	504	114
Rentals, Leases, and Repairs	204	61
Sites and Improvement of Sites	29	13
Buildings and Improvement of Buildings	56	23
Equipment	131	28
Equipment Replacement	40	22
Other Supplies	144	35
Debt Service/Loan Repayment	81	13
School Administrators:		
School Administrators' Salaries	702	150
School Administrators' Benefits	282	56
Other School-Based Expenditures:		
Clerical and Other Office Salaries	647	114
Personal Services of Instructional Consultants, Lecturers, and Others	105	28
Other Certificated Salaries	184	22
Benefits	81	16
Insurance	126	35

Travel and Conferences	67	21
Equipment	16	4
Other Supplies	43	11
Other Services and Operating Expenditures	351	85
District Operations:		
Superintendents' Salaries	108	54
Certificated Administrative Personnel's Salaries	63	7
Classified Administrators' Salaries	184	44
Certificated Supervisors' Salaries	137	13
Clerical and Other Office Salaries	431	76
Maintenance and Operations Salaries	49	9
Benefits	265	53
Dues and Membership	9	5
Other Services and Operating Expenditures	351	85
Utilities and Housekeeping Services	89	20
Rentals, Leases, and Repairs	23	7
Other Supplies	72	18
Equipment	82	18
Travel and Conferences	22	7
Undistributed School-Based Transfers	-59	-18

Appendix C

SUMMARY STATISTICS FOR DISTRICT SPENDING

This Appendix presents summary statistics for per-pupil spending on each category of expenditure and for the share of total general-fund expenditures districts devote to each category of expenditure. Means and medians are provided for information on the "typical" way that districts spend their education dollars across the defined categories of expenditure. In addition, several measures of dispersion provide information on the degree to which individual districts vary about the averages--how tightly packed districts are around the average or whether there is a lot of scatter around the average. Researchers use a variety of measures to examine dispersion in data, with each measure reflecting a different aspect of the distribution. Based on the measures used in other education research, this Appendix reports the range, restricted range, standard deviation, Gini coefficient, and the coefficient of variation. See Section 4 for a description of each of these measures.

Table C.1

Summary Statistics for District Per-Pupil General-Fund Expenditures, 1993-94

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations	Total Per-Pupil Expenditure
Average	$2,685	$291	$549	$206	$336	$415	$4,464
Median	$2,537	$254	$459	$188	$287	$356	$4,043
Range	$5,813	$4,107	$6,797	$1,379	$4,823	$6,123	$27,462
Restricted Range	$1,533	$485	$621	$238	$474	$489	$3,245
Standard Deviation	$613	$215	$436	$100	$224	$266	$1,555
Gini Coefficient	.13	.41	.42	.27	.37	.36	.19
Coefficient of Variation	.23	.74	.80	.48	.67	.64	.35

Table C.2

Summary Statistics for Share of Total District General-Fund Expenditures Allocated to Each Category, 1993-94

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Average	61%	6%	12%	5%	7%	9%
Median	62%	6%	11%	5%	7%	9%
Range	50%	18%	43%	17%	20%	16%
Restricted Range	16%	8%	8%	4%	6%	7%
Standard Deviation	5%	3%	3%	1%	2%	2%
Gini Coefficient	.05	.24	.16	.17	.15	.13
Coefficient of Variation	.09	.40	.29	.31	.29	.23

Appendix D

NUMBER OF DISTRICTS INCLUDED IN MEASURING EACH DISTRICT AND STUDENT CHARACTERISTIC

Appendix F provides regression results for the effect of district and student characteristics on district spending. The results are shown separately for different subsets of district sizes. Table D.1 presents the number of districts that are included in each district and student characteristic category for each subset of district size.

Table D.1

Number of Districts Included in Measuring Each Independent Variable for Each Subset of District Size

Independent Variables	Districts Enrolling <=300 Students	Districts Enrolling >300 Students	Total[75]
District Size	452	1,546	1,998
Unified Districts	22	586	608
High School Districts	14	192	206
Elementary Districts	416	768	1,184
Percentage of Limited English Proficient Students	438	1,540	1,978
Percentage Minority Enrollment	452	1,546	1,998
Percentage Children in Poverty	440	1,498	1,938
Percentage Special Education Students	452	1,540	1,992
Median Housing Value	416	1,467	1,883
Rural District	245	319	564
Suburban District	169	998	1,167
Mid-Size Central City District	38	180	218
Large Urban District	0	46	46
Teachers' Average Years Experience Teaching	452	1,546	1,998
Percentage Teachers with Master's Degrees	452	1,546	1,998

NOTE: This includes district data for both the 1992-93 and 1993-94 school years. The number of districts for both the 1992-93 and 1993-94 school years is 1,998. In 1992-93 there were 1,001 district and in 1993-94 there were 997 districts.

[75]See Appendix A for issues of missing data.

Appendix E

BIVARIATE RELATIONSHIPS BETWEEN THE LEVEL AND SHARE OF SPENDING AND DISTRICT AND STUDENT CHARACTERISTICS

This appendix examines how both per-pupil spending on the different spending categories and the allocation of resources to different spending categories varies for different types of districts and communities. Specifically, Table E.1 explores the simple relationships between average per-pupil spending and the district and student characteristics. Table E.2 explores the simple relationships between the average share of dollars districts devote to each spending category and the district and student characteristics. This is intended to provide an initial look at how spending varies based on individual district and student characteristics, not holding other district and student factors constant. The factors used in the bivariate comparisons here are used in the multivariate regression analyses presented in Appendix F. The results from the multivariate analyses are presented in Tables F.1 through F.13.

The first column of Table E.1 and Table E.2 lists the district and student characteristics. For those characteristics in which there are a range of values, spending is shown at each of the quartiles. For example, the smallest 25 percent of districts enroll less than or equal to 300 students while the largest 25 percent of districts enroll more than 5,000 students. Spending is shown at each of the quartiles--districts enrolling 0 to 300 students, 301 to 1,500 student, 1,501 to 5,000 students, and 5,001 or more students. Table E.1, for example, shows that per-pupil spending in general and for each of the spending categories decreases as we move from smaller to larger size districts. In addition, it should be noted that the numbers presented in Tables E.1 and E.2 are average expenditures using data from both the 1992-93 and 1993-94 school years. The bottom row of Table E.1 and Table E.2 shows the average per-pupil and average share expenditure, respectively, for each of the expenditure categories across all school districts in California.

Table E.1

Average Per-Pupil District General-Fund Spending on Each Category of Spending by District and Student Characteristics

Characteristics	Total Per-Pupil General-Fund Expenditures ($)	Classroom Personnel and Materials ($)	Direct Services ($)	School Facilities ($)	School Administration ($)	Other School Expenditures ($)	District Operations ($)
District Size							
0-300	5,332	3,004	353	733	265	455	549
301-1,500	4,281	2,614	282	506	185	313	402
1,501-5,000	4,073	2,529	270	463	188	282	363
5,001 or more	4,031	2,510	261	447	182	291	345
Unified District	4,419	2,668	314	539	200	321	398
Elementary District	4,263	2,612	245	496	204	319	396
High School District	5,182	2,870	476	723	210	444	540
Limited English Proficient Students							
Less than 2%	5,034	2,908	353	675	231	396	494
2% - <8%	4,203	2,579	264	496	198	302	385
8% - <20%	4,190	2,567	275	477	198	308	380
20% or more	4,171	2,558	264	476	185	320	384
Percentage Minority Enrollment							
Less than 16%	4,610	2,756	302	572	225	347	427
16% - <31%	4,474	2,710	288	540	215	330	416
31% - <57%	4,381	2,612	299	544	193	335	420
57% or more	4,159	2,546	270	475	181	316	385

Table E.1-
Continued

Characteristics	Total Per-Pupil General-Fund Expenditures ($)	Classroom Personnel and Materials ($)	Direct Services ($)	School Facilities ($)	School Administration ($)	Other School Expenditures ($)	District Operations ($)
Percentage Children in Poverty							
Less than 7%	4,559	2,770	271	537	212	342	427
7% - <15%	4,239	2,579	278	498	199	320	387
15% - <24%	4,417	2,629	302	551	199	334	418
24% or more	4,428	2,657	306	546	204	334	417
Percentage Special Education Students							
Less than 4%	5,016	2,873	335	681	238	416	492
4% - <8%	4,163	2,544	273	495	183	301	382
8% - <10%	4,053	2,520	263	447	189	290	362
10% or more	4,477	2,723	294	523	209	332	423
Median Value Housing							
Less than 70,000	4,626	2,755	329	599	208	347	434
70,000 - 125,000	4,549	2,655	337	596	211	344	425
125,001 - 200,000	3,991	2,478	247	437	186	297	365
200,001 or more	4,431	2,710	254	502	207	338	419
Rural District	5,131	2,922	374	693	240	420	517
Large Urban District	4,361	2,692	253	467	200	352	398
Suburban District	4,144	2,561	260	475	189	300	375
Mid-Size Central City District	3,941	2,470	238	439	183	272	340
Average Across All Districts	4,405	2,656	290	532	203	332	412

Table E.2

Average Share of Total District General-Fund Spending Allocated to Each Category of Spending by District and Student Characteristics

Characteristics	Classroom Personnel and Materials (%)	Direct Services (%)	School Facilities (%)	School Administration (%)	Other School Expenditures (%)	District Operations (%)
District Size						
0-300	58.5	6.0	12.6	5.2	8.2	9.8
301-1,500	61.6	6.4	11.5	4.3	7.1	9.2
1,501-5,000	62.2	6.5	11.2	4.6	6.8	8.8
5,001 or more	62.4	6.4	11.0	4.5	7.2	8.5
Unified District	60.9	7.0	11.9	4.6	7.1	8.8
Elementary District	62.1	5.6	11.2	4.8	7.3	9.1
High School District	57.6	8.7	12.8	4.2	8.0	9.6
Limited English Proficient Students						
Less than 2%	60.1	6.5	12.2	4.7	7.4	9.2
2% - <8%	61.7	6.2	11.5	4.7	7.0	9.1
8% - <20%	61.6	6.5	11.2	4.7	7.2	8.9
20% or more	61.7	6.2	11.2	4.4	7.5	9.1
Percentage Minority Enrollment						
Less than 16%	60.9	6.3	11.7	4.9	7.3	9.0
16% - <31%	61.3	6.3	11.6	4.8	7.2	9.1
31% - <57%	61.3	6.4	11.6	4.5	7.3	9.1
57% or more	61.5	6.4	11.3	4.4	7.4	9.1

Table E.2- Continued

Characteristics	Classroom Personnel and Materials (%)	Direct Services (%)	School Facilities (%)	School Administration (%)	Other School Expenditures (%)	District Operations (%)
Percentage Children in Poverty						
Less than 7%	61.5	5.8	11.5	4.7	7.3	9.2
7% - <15%	61.2	6.4	11.5	4.7	7.4	9.0
15% - <24%	61.6	6.4	11.4	4.6	7.2	8.9
24% or more	60.7	6.7	11.8	4.6	7.3	9.2
Percentage Special Education Students						
Less than 4%	59.5	6.2	12.5	4.8	7.9	9.3
4% - <8%	61.5	6.5	11.6	4.4	7.1	9.0
8% - <10%	62.3	6.4	10.9	4.7	7.1	8.9
10% or more	61.5	6.3	11.3	4.7	7.2	9.2
Median Value Housing						
Less than 70,000	60.5	6.8	12.3	4.6	7.2	9.1
70,000 - 125,000	60.7	7.0	12.0	4.7	7.1	8.7
125,001 - 200,000	62.2	6.1	10.9	4.6	7.3	9.1
200,001 or more	61.7	5.7	11.2	4.7	7.5	9.3
Rural District	58.8	6.9	12.5	4.7	7.8	9.7
Large Urban District	62.1	6.2	11.2	4.6	7.1	8.9
Suburban District	62.8	6.0	11.1	4.7	6.8	8.6
Mid-Size Central City District	62.1	5.7	10.6	4.6	8.0	9.0
Average Across All Districts	61.3	6.4	11.6	4.6	7.3	9.1

Appendix F.

MULTIVARIATE REGRESSION RESULTS

Multivariate regression analyses were used to examine the effect of district and student characteristics on both per-pupil spending in each of the expenditure categories and the share of dollars districts allocate to the spending categories. The full results from the regression analyses are presented in tables in this Appendix.

Table F.1

Total Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size[76]	-.09**	-.06**
Unified District	983.42**	622.39**
High School District	1270.21**	896.97**
Percentage of Limited English Proficient Students	-8.86*	-2.64
Percentage Minority Enrollment	8.27**	2.54**
Percentage Children in Poverty	-.98	11.02**
Percentage Special Education Students	5.30	32.98**
Median Housing Value	.34	1.59**
Rural District	-224.18	-132.59
Suburban District	-766.14**	-348.68**
Mid-Size Central City	-665.17*	-290.60**
Intercept	6134.19	4234.38
Adjusted R-square	.21	.40
Observations[77]	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

[76]District size is logged in all equations. The coefficients on district size were transformed to be reported as marginal effects for consistency throughout the tables. The marginal effects were evaluated at the mean of the data.

[77]As described in Section 4, the regression equations were estimated using both 1992-93 and 1993-94 data after it was determined that the data could be pooled. The issue of missing data is addressed in Appendix A.

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Table F.2

Classroom Personnel and Materials Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.03**	-.04**
Unified District	369.26**	220.58**
High School District	392.14**	281.53**
Percentage of Limited English Proficient Students	-1.53	-.06
Percentage Minority Enrollment	1.77*	-.03
Percentage Children in Poverty	-.45	6.20**
Percentage Special Education Students	7.01*	20.60**
Median Housing Value	.13	.74**
Rural District	-142.51	-98.98
Suburban District	-325.95**	-150.95**
Mid-Size Central City	-294.93**	-124.95**
Intercept	3187.94	2357.65
Adjusted R-square	.25	.33
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.3

Direct Services Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.01**	-.05**
Unified District	142.25**	95.87**
High School District	263.99**	205.43**
Percentage of Limited English Proficient Students	-1.69**	-.80**
Percentage Minority Enrollment	1.14**	.17
Percentage Children in Poverty	-.13	1.35**
Percentage Special Education Students	.55	3.97**
Median Housing Value	.18**	-.08**
Rural District	20.95	13.18
Suburban District	-60.76	-28.68
Mid-Size Central City	-46.18	-27.29
Intercept	410.20	294.98
Adjusted R-square	.17	.41
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.4

School Facilities Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.02**	-.09**
Unified District	233.49**	149.64**
High School District	306.65**	204.21**
Percentage of Limited English Proficient Students	-2.22	-.01
Percentage Minority Enrollment	1.93**	.18
Percentage Children in Poverty	-.77	.68
Percentage Special Education Students	-1.79	.46
Median Household Income	.16	.04
Rural District	-33.91	-10.93
Suburban District	-148.45*	-65.74**
Mid-Size Central City	-115.02	-56.51*
Intercept	995.76	636.13
Adjusted R-square	.13	.28
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.5

School Administration Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.01**	-.04**
Unified District	35.01**	28.36**
High School District	25.03**	24.98**
Percentage of Limited English Proficient Students	-.15	-.28**
Percentage Minority Enrollment	-.23	.01
Percentage Children in Poverty	.54**	.43**
Percentage Special Education Students	-.41	1.55**
Median Housing Value	.08**	.09**
Rural District	-18.44	-9.08
Suburban District	-42.66**	-18.30**
Mid-Size Central City	-38.19**	-18.41**
Intercept	312.23	187.34
Adjusted R-square	.15	.18
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

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Table F.6

Other School Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.01**	-.10**
Unified District	110.28**	68.71**
High School District	174.90**	126.60**
Percentage of Limited English Proficient Students	-.94	-.17
Percentage Minority Enrollment	1.37**	.77**
Percentage Children in Poverty	.08	1.09**
Percentage Special Education Students	-.16	3.13**
Median Housing Value	.19**	.31**
Rural District	-38.35	-12.42
Suburban District	-105.88**	-47.57**
Mid-Size Central City	-101.16**	-45.94**
Intercept	622.06	322.95
Adjusted R-square	.18	.26
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.7

District Operations Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.01**	-.12**
Unified District	127.56**	72.82**
High School District	203.64**	131.55**
Percentage of Limited English Proficient Students	-1.81*	-.58*
Percentage Minority Enrollment	1.95**	.87**
Percentage Children in Poverty	.16	1.68**
Percentage Special Education Students	2.10	3.92**
Median Housing Value	.20*	.37**
Rural District	-12.59	-13.21
Suburban District	-91.24	-43.05
Mid-Size Central City	-83.05	-40.20
Intercept	691.33	508.03
Adjusted R-square	.16	.36
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.8

Share of Dollars Allocated to Classroom Personnel and Materials Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	.00**	.01**
Unified District	-3.78**	-3.63**
High School District	-6.22**	-6.49**
Percentage of Limited English Proficient Students	.05**	.03**
Percentage Minority Enrollment	-.04**	-.03**
Percentage Children in Poverty	-.01	-.01
Percentage Special Education Students	.03	-.02
Median Housing Value	-.00**	-.00**
Rural District	-.03	-.43
Suburban District	2.05**	1.34*
Mid-Size Central City	1.91**	1.21*
Intercept	51.61	56.18
Adjusted R-square	.30	.35
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.9

Share of Dollars Allocated to Direct Services Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	.00	.01
Unified District	1.35**	1.28**
High School District	3.19**	3.24**
Percentage of Limited English Proficient Students	-.02**	-.01**
Percentage Minority Enrollment	.00	.00
Percentage Children in Poverty	.00	.02**
Percentage Special Education Students	.00	.03*
Median Housing Value	-.00**	-.00**
Rural District	.88*	.50
Suburban District	.12	.00
Mid-Size Central City	.16	-.06
Intercept	5.57	6.58
Adjusted R-square	.23	.30
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.10

Share of Dollars Allocated to School Facilities Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.08**	-.02**
Unified District	1.87**	1.65**
High School District	2.28**	2.11**
Percentage of Limited English Proficient Students	-.01	-.00
Percentage Minority Enrollment	.01*	.00
Percentage Children in Poverty	-.01	-.01
Percentage Special Education Students	-.05**	-.08**
Median Household Income	-.00**	-.00**
Rural District	-.15	.14
Suburban District	-.79	-.52
Mid-Size Central City	-.51	-.41
Intercept	16.04	14.23
Adjusted R-square	.14	.18
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.11

Share of Dollars Allocated to School Administration Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.00	.01**
Unified District	-.14	.02
High School District	-.55**	-.36**
Percentage of Limited English Proficient Students	.00	-.01*
Percentage Minority Enrollment	-.01**	-.00
Percentage Children in Poverty	.01**	-.00
Percentage Special Education Students	-.01	.01
Median Housing Value	.00**	.00*
Rural District	-.29	-.13
Suburban District	-.23**	-.07
Mid-Size Central City	-.19**	-.13
Intercept	5.61	4.56
Adjusted R-square	.05	.06
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.12

Share of Dollars Allocated to Other School Expenditures Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.00**	-.03**
Unified District	.57**	.52**
High School District	1.17**	1.31**
Percentage of Limited English Proficient Students	.00	-.00
Percentage Minority Enrollment	.01**	.01**
Percentage Children in Poverty	.00	.00
Percentage Special Education Students	-.01	.01
Median Housing Value	.00**	.00*
Rural District	-.51	-.05
Suburban District	-.93**	-.50*
Mid-Size Central City	-1.12**	-.59*
Intercept	10.34	7.25
Adjusted R-square	.14	.12
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table F.13

Share of Dollars Allocated to District Operations Regressed on Student and District Characteristics

Characteristics	All Districts	Districts with Enrollments <=300
District Size	-.00**	-.05**
Unified District	.38**	.32**
High School District	1.07**	1.06**
Percentage of Limited English Proficient Students	-.01**	-.01
Percentage Minority Enrollment	.02**	.01**
Percentage Children in Poverty	.01	.01*
Percentage Special Education Students	.04**	.02*
Median Housing Value	.00**	.00**
Rural District	.20	.02
Suburban District	-.25	-.27
Mid-Size Central City	-.45	-.35
Intercept	11.28	11.75
Adjusted R-square	.16	.20
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Appendix G.

COST ADJUSTED EXPENDITURES

Per-pupil spending in school districts can differ because of geographic cost differences. For example, in different geographic locations it may cost different amounts to recruit and employ school personnel with similar characteristics into similar jobs and job assignments. These are cost differences that are independent of decisions that school districts make, for example, to hirer better educated or more experienced teachers. Accurately measuring such geographic cost differences has presented a considerable challenge in education. While measuring these cost differences has presented difficulties, one needs to be able to adjust educational expenditure data for differences in the purchasing power of the educational dollar across jurisdictions in order to make comparisons of real educational services provided. At the same time, using an inappropriate index for adjusting expenditure data can significantly change the results and can lead to incorrect conclusions about the level of educational services being provided.

A few prominent studies have attempted to measure geographic cost differences across school districts in different regions of the country. In general, these studies attempt to measure teacher cost differences and do not measure cost differences for other certified and noncertified personnel or personnel resources. A study by Stephen Barro (1992) developed an average teacher salary index adjusted for variations in education and experience. Barro used a teacher salary equation in which he removed the variations in salaries associated with variations in educational preparation and experience--two teacher characteristics commonly reflected in public school district salary scales for teachers. Other researchers, including McMahon and Chang (1991), have developed a cost-of-living adjustment to account for variations in the purchasing power of the education dollar in different regions.

In addition, a recent study from the National Center for Education Statistics (October 1995) developed a public school teacher cost index (TCI) which seeks to account for the variations in teachers salaries resulting from both cost-of-living differences in different areas and other cost factors that may result in teacher salary differences. The factors included in determining the TCI include: the competitiveness of the labor market for teachers, unemployment rates in the area, land prices, growth in population, population density, urbanicity, levels of

crime, quality of the weather, and other attributes of the regions or districts which affect their attractiveness as places to live or work. In addition, this index attempts to control for other attributes of the teachers or schools or districts that might be within local control and do not reflect geographic cost differences.

Although the concept of adjusting for cost differentials in making comparisons in expenditures across geographic locations is generally accepted, the most appropriate set of adjustments to be used for these purposes has yet to be fully agreed upon or developed. To allow the reader some insight into the impact of cost adjustments to the results presented in this report, cost adjusted expenditure information and the limitations of that information are presented in this Appendix. The cost index used here is the TCI from the National Center for Education Statistics' report on public school teacher cost differentials.[78]

This Appendix will present the effect of the student and district characteristics on cost-adjusted per-pupil expenditures. Both total per-pupil general fund expenditures and per-pupil classroom personnel and materials expenditures will be adjusted based on the TCI. It is the teacher's salary component of total per-pupil general fund expenditures and per-pupil classroom personnel and materials expenditures that will be adjusted by the TCI. The effect of geographic cost differences on other expenditure categories--direct services, school facilities, school administration, and district operations--will not be examined as cost indices similar to those developed for teacher's salaries have not been developed for other certified and noncertified personnel or personnel resources.

LIMITATIONS IN INTERPRETING COST-ADJUSTED RESULTS

There are several limitations to interpreting the cost-adjusted expenditure results presented in this Appendix. First, the development of a cost of education index is still a work in progress and the most appropriate set of adjustments to be used for these purposes has yet to be fully agreed upon. Using an index for adjusting expenditure data can significantly change the results and, to the extent that the index is inappropriate, can lead to incorrect conclusions. Second, and possibly of most concern, several of the independent variables used to determine the TCI are the same as or similar to the independent variables used in my equations to see the effect of district and student characteristics on per-pupil spending. For example, we both use measures of district

[78]For information on how this index compares to that from Barro and from McMahon and Chang, see Chapter 4 of National Center for Education Statistics (October 1995).

wealth and district urbanicity. Finally, a teacher cost index in the NCES report is provided for specific large metropolitan districts in California--Riverside, San Bernadino, Los Angeles, Long Beach, San Jose, Anaheim, Santa Ana, and San Francisco--while the other districts are divided into metropolitan and nonmetropolitan districts with one teacher cost index for each. Using one cost index for all other metropolitan districts and one cost index for all nonmetropolitan districts likely does not account for the vast differences between districts included in each of these categories.

COST-ADJUSTED EXPENDITURES

Similar to Tables F.1 and F.2 in this report, Tables G.1 and G.2 below present the effect of the student and district characteristics on total per-pupil general-fund expenditures and on per-pupil classroom personnel and materials expenditures. But in Tables G.1 and G.2, the teachers' salary component of per-pupil total general fund expenditures and per-pupil classroom personnel and materials expenditures has been adjusted by the Teacher Cost Index. To see the effect of adjusting teachers' salaries by the Teacher Cost Index, the coefficients in Tables F.1 and F.2 can be compared with those in Tables G.1 and G.2, respectively. Generally, there is little change in the size of the coefficients when teachers' salaries are adjusted by the TCI and in no case is the statistical significance of a variable changed.

While the absolute size of the changes in the coefficients between the regressions using a cost index and those not using a cost index is small, there are some general patterns in the direction of the changes. In general, the differences in per-pupil spending between elementary districts and high school and unified districts are larger when using the cost-adjusted teacher salaries. In addition, the effects of the student need factors on per-pupil spending are generally smaller except for the effect of special education students on per-pupil spending which is larger.

Table G.1

Total Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics, with Teacher Cost Index

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.11**	-.06**
Unified District	999.99**	635.52**
High School District	1286.77**	909.07**
Percentage of Limited English Proficient Students	-8.80*	-2.50
Percentage Minority Enrollment	7.69**	1.94*
Percentage Children in Poverty	-1.37	10.87**
Percentage Special Education Students	7.20	35.30**
Median Housing Value	.02	1.31**
Rural District	-201.72	-99.13
Suburban District	-748.56**	-328.41**
Mid-Size Central City	-679.57*	-301.69**
Intercept	6210.36	4300.283
Adjusted R-square	.22	.41
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

Table G.2

Classroom Personnel and Materials Per-Pupil General-Fund Expenditures Regressed on Student and District Characteristics, with Teacher Cost Index

Characteristics	All Districts	Districts with Enrollments >300
District Size	-.03**	-.05**
Unified District	385.85**	233.72**
High School District	408.72**	293.65**
Percentage of Limited English Proficient Students	-1.46	.08
Percentage Minority Enrollment	1.19*	-.62
Percentage Children in Poverty	-.83	6.05**
Percentage Special Education Students	8.91**	22.92**
Median Housing Value	-.19	.47**
Rural District	-120.09	-65.57
Suburban District	-308.39**	-130.71**
Mid-Size Central City	-309.33**	-136.03**
Intercept	3264.17	2423.585
Adjusted R-square	.28	.33
Observations	1852	1453

NOTE: * means statistically significant at the 5 percent level. ** means statistically significant at the 1 percent level.

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Appendix H.

MULTICOLLINEARITY

Several of the independent variables in the regression analyses may be highly related or measure similar effects. This multicollinearity of variables has several consequences. The regression coefficients will be unbiased and efficient and the overall fit of the model will be preserved. But, the estimated variances and, therefore, standard errors will be relatively large as the model has difficulty distinguishing the independent effects of each of the variables when they are closely related. The larger standard errors mean that statistical inferences may be incorrect as coefficients may not be statistically significant and estimates of the coefficients in the model may be unstable with respect to subsets of variables.

This Appendix examines the correlations between independent variables and the effect on the regression results of including or excluding particular independent variables. Unfortunately, there are no appropriate statistical techniques to address the problem of multicollinearity. Omitting variables that are relevant to the regression model introduce other statistical problems including bias in the estimates of the coefficients.

Table H.1 presents a correlation matrix between suspect independent variables.

Table H.1

Correlation Matrix

	Size	Limited English	SpecialEd	Minority	Poverty	Housing
Size	1.00					
Limited English	0.14	1.00				
SpecialEd	0.08	0.08	1.00			
Minority	0.16	0.61	0.09	1.00		
Poverty	0.01	0.31	-0.07	0.33	1.00	
Housing	0.08	-0.04	0.15	-0.07	-0.40	1.00

As Table H.1 shows, the percentage of students in poverty is highly correlated with median value owner-occupied housing, the percentage of students who are limited English Proficient, and the percentage of minority students. In addition, the percentage of minority students is highly correlated with the percentage of limited English proficient students.

I ran separate regression models to examine the effect on the statistical significance of the coefficients when the percentage of students in poverty and the percentage of minority students are excluded from the regression model. Table H.2 examines changes in estimates of coefficients when the percentage of students in poverty is excluded as an independent variable from the regression equations and Table H.3 examines changes in estimates of coefficients when the percentage of minority students is excluded from the regression equations. A blank cell means that there was no change in the statistical significance of the coefficient and no change in the sign of statistically significant coefficients between the full model and the model that excluded the variable. Changes in estimates of the coefficients were examined both for per-pupil spending on each category and for the share of total general-fund spending allocated to each category.

Table H.2

Effect on Regression Results of Excluding the Percentage of Students in Poverty from the Regression Equations[79]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Size						
English				Significant negative effect on the share of dollars		
SpecialEd						
Minority		Significant positive effect on per-pupil spending				
Housing		Significant negative effect on per-pupil spending				

Sixty-four coefficients are examined in Table H.2 as changes in the effect of each independent variable are examined on both the level and share of spending for each category. There were three changes in the statistical significance or sign of coefficients when the percentage of children in poverty was excluded from the regression equations. The percentage of limited English proficient students, previously not a statistically significant predictor of the share of dollars allocated to school administration, became a statistically significant negative predictor. The percentage of minority students became a statistically significant positive predictor of per-pupil spending on direct services while it was not previously a statistically significant predictor. And, the median value of owner-occupied housing became a statistically significant negative predictor of per-pupil spending on direct services

[79]There was no change in the significance or sign of any of the other independent variables when the percentage of students in poverty was excluded from the regression equations.

while it was previously a statistically significant positive predictor of per-pupil spending.

Table H.3

Effect on Regression Results of Excluding the Percentage of Minority Students from the Regression Equations[80]

	Classroom Personnel and Materials	Direct Services	School Facilities	School Admin-istration	Other School	District Operations
Size						
English				Significant negative effect on the share of dollars	Significant positive effect on the share of dollars	Significant positive effect on the share of dollars
SpecialEd						
Poverty						
Housing		Significant negative effect on per-pupil spending				

There were four changes in the statistical significance or sign of coefficients when the percentage of minority students was excluded from the regression equations. Three of those changes are in the statistical significance of coefficients on the percentage of limited English proficiency students. While the percentage of limited English proficient students is not a statistically significant predictor of the share of dollars allocated to school administration, other school expenditures, and district operations in the full model, it is a statistically significant predictor for each after omitting the variable for the percentage of minority students. In addition, the median value of owner-occupied housing became a statistically significant negative

[80]There was no change in the significance or sign of any of the other independent variables when the percentage of minority students was excluded from the regression equations.

predictor of per-pupil spending on direct services once the percentage of minority students was omitted from the model.

The results suggest that multicollinearity is generally not a problem and for the vast majority of coefficients the estimates of the coefficients in the model are stable with respect to subsets of variables. The results do suggest that estimates of some of the coefficients on the percentage of minority students and the percentage of limited English proficient students, in particular, need to be viewed with caution. The estimates of the coefficients for each of these variables are stable with regard to per-pupil spending on different categories but not with regard to the share of spending allocated to certain categories of spending.

Appendix I.

VARIABLE DEFINITIONS

Children Below Poverty is based on 1990 census data and includes children 5 years of age and over for whom poverty status was assigned in 1989. For a detailed discussion of the poverty definition see U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 171, Poverty in the United States: 1988 and 1989.

District Size is defined as the count of students on the current roll on or about October 1, 1992 and 1993.

Elementary districts provide instruction below 9th grade.

High School districts provide instruction between 7th and 12th grades.

Limited English Proficient is defined as children 5 years and over living in households in which English is not the spoken language, who speak English "not well" or "not at all."

Median Value Owner-Occupied Housing is defined as the median value of specified owner-occupied housing units.

Minority is defined as the number of students who are black, Hispanic, Asian, American Indian, and Alaskan native.

Rural defines an area with 2,500 inhabitants or fewer; and/or a population density of less than 1,000 per square mile; and/or does not have a Census Urbanized Area Code.

Special Education is defined as the percentage of students with a written Individual Education Program (IEP) under Public Law 94-142 or the Individuals with Disabilities Education Act (IDEA).

Suburban is defined as a closely settled area, contiguous to a central city outside a central city with a minimum population of 2,500 inhabitants, with a population density of at least 1,000 per square mile, and with a Census Urbanized Area Code.

Unified districts provide instruction for K-12th grades.

Urban is defined as an area with a population concentration of at least 50,000; generally consisting of a central city and the surrounding, closely settled, contiguous territory and with a population density of at least 1,000 per square mile.

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